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MONTHLY INTERNATIONAL FEATURE ISSUE

MAR 7 1946

# The OIL WEEKLY

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March 4, 1946

VOLUME 121, NUMBER 1

# WHICH SLING?

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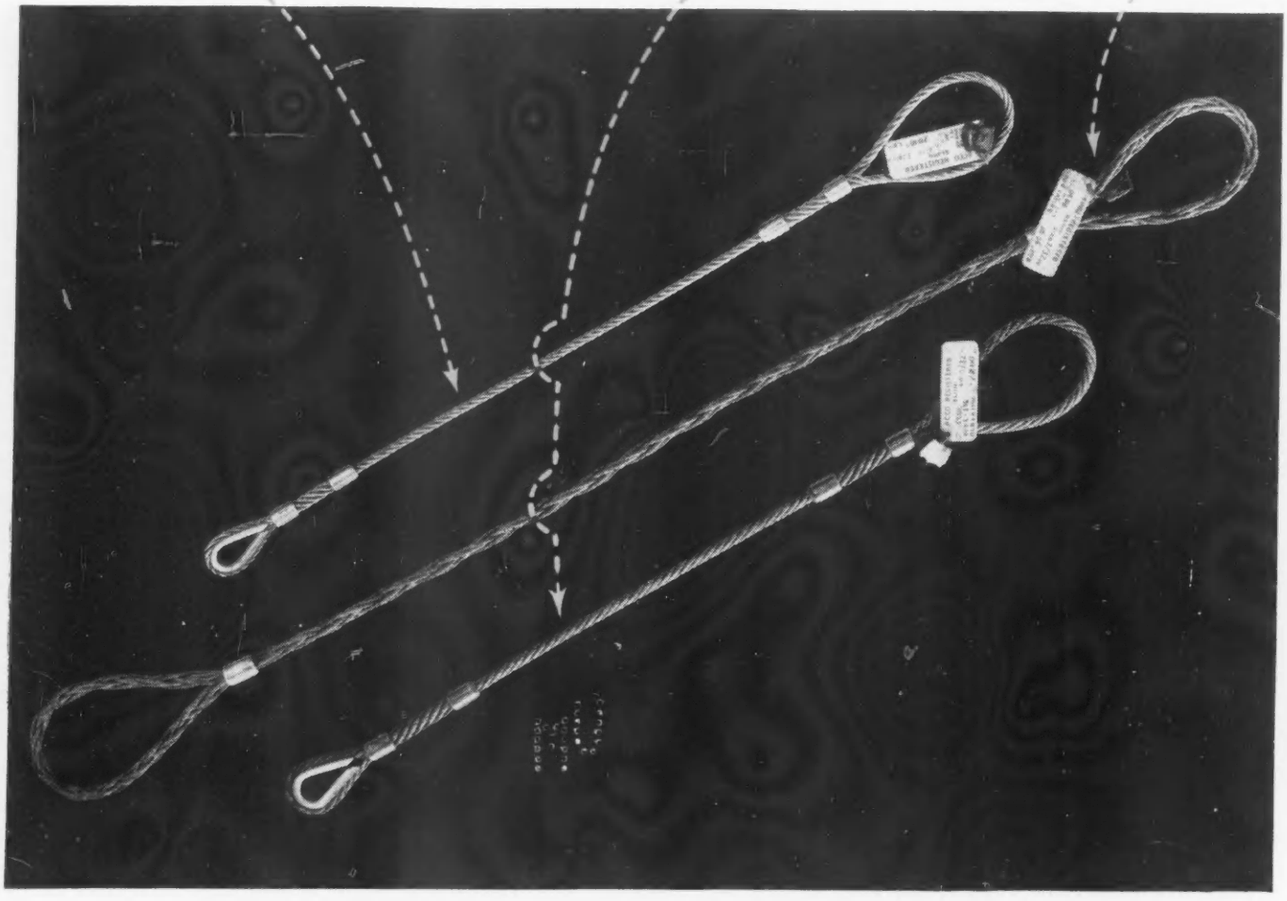

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**for the refining-natural gasoline industry**

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## LOOKING AHEAD
### ... with the Editor

CONSTRUCTING a 14-inch gas line through the marshes of Vermilion Parish, Louisiana, tested the resourcefulness of the pipeliners of the Associated Contractors and Engineers who built the 63-mile line from Humble Oil & Refining Company's Pecan Island field to a juncture with the line of Interstate Natural Gas Company near Opelousas.

Upper portion of the project presented no unusual difficulties as the terrain is flat and extensively cultivated. The section built from the Pecan Island field to the vicinity of Intracoastal City, however, passed through 22 miles of inundated marshland inhabited only by muskrats and other wild life. Severe winter weather combined with muck and mud to retard progress on the line, and made life generally unpleasant for the personnel.

Route of the line south from Intracoastal City roughly parallels the canals used in reaching Pecan Island. Along the canal banks, a number of push stations were established for assembling equipment and welding pipe. From each station, as much as 15,000 feet of pipe could be pushed ahead into the flooded ditches, far enough to make contact with pipe at the next station. Use of push points centralized all construction at predetermined localities where adequate provisions were made to minimize the effect of the muddy terrain.

An article by Gordon B. Nicholson, Staff Writer, on the gas line will appear in next week's issue of THE OIL WEEKLY.


# The OIL WEEKLY

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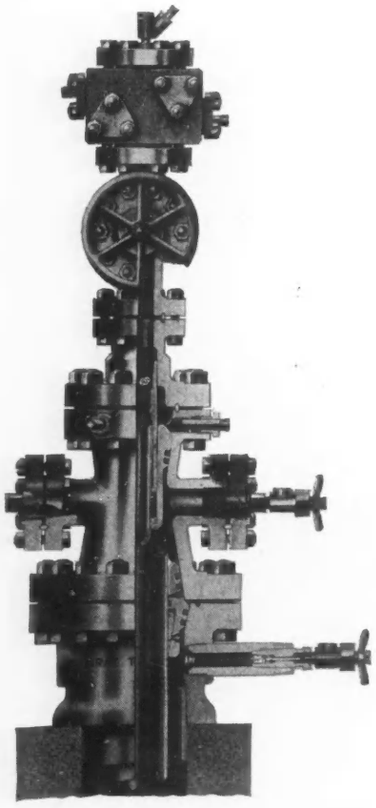
# SIMPLICITY is the first requisite of well control



## Look for the parts that aren't there!

Look for the parts that have been there, but aren't there, in the completed well manifold, because provision was made for their removal to the position of accessories after they had completed their operating function—

**the little side outlet valve, the big blowout preventer, the master valves with gaskets and packing materials exposed to large pressure subject areas, the welding flanges with lever arm exerting stresses that break the weld, etc.**

We cannot provide strength in the weaker, highly flowable short-lived materials that must be used as temporary sealing mediums in blowout preventers, strippers, etc., equal to the strength of steel used in the bodies, flanges and studs, but we can and have provided a means of assembling and disassembling this equipment with control, thereby removing that which must depend on short-lived materials from positions where long life under conditions that do not permit replacement is the first essential.

The whole is greater than any of its parts. Look for the parts that aren't there!

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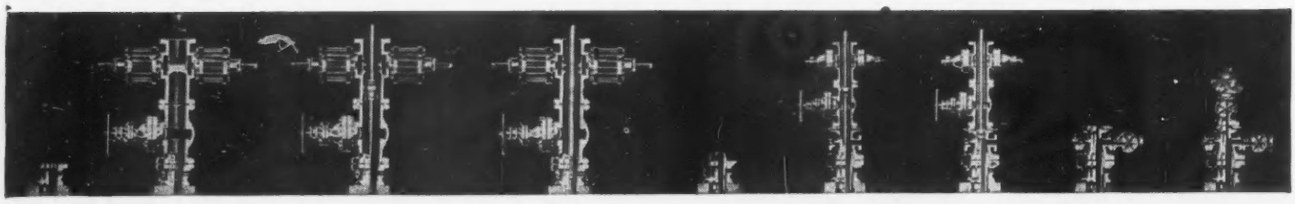

Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

THE OIL WEEKLY, published every Monday. Entered as second class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

# The Changing Panorama

## Stripper Well Loss Rated as Considerable

THREE million barrels of recoverable oil were lost to the state of Oklahoma during 1944 because operators of stripper wells could not produce the oil economically. Had the price of crude been on a parity with prices of other commodities which have steadily increased this oil could have been saved to the state and nation.

The figures were cited by E. G. Dahlgren, technical secretary of the Interstate Compact Commission, in an address before the Oklahoma City Geological Society. Dahlgren stated that operators, despite the subsidy for marginal production, could not produce the oil and break even. Since it will not pay to re-drill the areas, the oil is irrevocably lost.

Dahlgren said that at the end of 1944 there were 49,398 wells classed as strippers in Oklahoma and that 1200 had been plugged during 1944. These wells are on 690,000 acres, as compared with 831,000 productive acres in the state. Average price for stripper oil in 1944 was $1.16 per barrel.

The importance of stripper wells was emphasized by the engineer who stated that in the 22 oil-producing states in the nation, at the end of 1944 there were 296,366 stripper wells which produced 217,041,621 barrels of oil. Productive acreage was estimated at 3,271,638 against a total of 6,767,083 productive acres in the country. Because it was not economically possible to operate at a profit, a total of 9400 stripper wells were plugged during 1944 resulting in a loss of 34,297,740 barrels of unrecoverable oil.

Dahlgren estimated that if the price of oil can be increased only 25 cents a barrel, 337,031,550 barrels of additional oil may be recovered, and if an increase of 50 cents is allowed the recoverable amount probably would reach 979,728,000 barrels.

## Blueprint

PETROLEUM in Peace and War" is the title of a 214-page printed book just received from the Petroleum Administration for War. It consists of papers presented by PAW before the O'Mahoney Special Senate Petroleum Committee.

The book contains a great deal of interesting matter and in the event of another war will unquestionably be the blueprint by which petroleum affairs of such a war will be handled. PAW men who had a part in it are to be congratulated on the job they did in presenting the data.

## Better Put Drilling Charge-Off into Law

THERE may be a segment of the oil industry which believes that the view expressed by Congress in the passage of House Concurrent Resolution No. 50 declaring that drilling costs are deductible in computing taxable income is actually a law.

This is not the case. The joint resolution only expressed the opinion of a majority of the Congress and did not amend the Internal Revenue Code, which is supposed to be the law of the land with respect to levying taxes.

To have the effect of making new law or changing old, a congressional act has to be passed and submitted to the president for his signature. This never has been done in the matter of drilling costs as relating to income tax deduction.

This was spotlighted when the Fifth Circuit Court denied an application for rehearing in the FHE case, which brought about the congressional resolution. Terming the option to deduct drilling costs in computing income taxes a "special favor" to the oil industry, the court said the resolution was no more than assurance that a majority of Congress is in favor of it.

Even though the Bureau of Internal Revenue has indicated it would continue to follow the opinion expressed by Congress, the courts can only look to the statutes for their decisions. There is no debate on that point.

Therefore it is important that the oil industry seek to have Congress convert its opinion into law rather than to keep it in its present form which is no more or less than a constant threat to the industry.

*The Independent Petroleum Association of America views the Anglo-American Agreement as a constructive step toward the protection of our domestic industry from the chaos that could be caused by the exploitation of foreign oil reserves now developed to their greatest potential capacity in history.*

—Independent Petroleum Association of America

## FPC Chairman's Views On Public Utilities

THE Independent Natural Gas Association of America thinks that FPC Chairman Leland Olds has very definite and dangerous views relating to public utility matters.

"Another instance," INGAA's current bulletin states, "of the direction in which Chairman Leland Olds of the Federal Power Commission would like to see this country go in public utility matters is evidenced by the testimony he gave recently before the Boren Sub-Committee of the House Interstate and Foreign Commerce Committee.

"Defending the public ownership movement, the FPC chairman contended that utility operations are merely 'entrusted' to private enterprise by 'option' of the governmental agencies in the areas served.

"While this testimony concerned electric power affairs, it nevertheless gives an insight into his thinking on utility matters generally and is of interest to the natural gas industry because the latter is subject to utility control by the FPC which Olds heads."

*Our peculiarly American system has made America what it is, and this same system so scorned in some quarters, has saved the world twice in one generation.*

—GEORGE W. WOLF, president, United States Steel Export Company.

## Division of the Income of Industry

JUDGING from some public opinion polls taken recently, the average man is under an erroneous impression as to the share which capital and labor take from the income of industry. According to the Economic Almanac, published by the Conference Board, in 1939, a typical year, here is what happened:

After materials and other unavoidable costs were paid, manufacturing wages took 84.7 percent of what was left and capital took 15.3 percent. Out of the 15.3 of what was left and which was taken by capital, the investors provided new venture capital to expand industry. An average cost of $5000 per each worker was needed for such new venture financing. It was spent on new construction for plants, tools, etc.

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# The Week's News

NOMINATION of Julius A. Krug, last WPB chief, to be successor to Harold L. Ickes as Secretary of the Interior, was made last week in Washington. The oil industry found itself unable to evaluate immediately the significance of the appointment in its relation to major petroleum problems. Page. 9.

**Anglo American Oil Pact**—Texas interests were prepared to make their presentation against the Anglo-American petroleum agreement before the Senate Foreign Relations Committee when hearings were indefinitely postponed. Hearings on the proposed $3.75 billion loan to England will begin, as scheduled, March 5. Page 8.

**Farbenindustrie Fate**—Charges that the military government in Germany has failed to carry out commitments of the Potsdam agreement for the elimination of I. G. Farbenindustrie, largely because of the interference of State Department officials and industrial men attached to the military government, were laid before a congressional committee. Page 9.

**Pauley Continues Fight**—Nomination of Edwin W. Pauley to be Undersecretary of the Navy continued to be the subject of stormy hearings before the Senate Naval Affairs Committee, with the nominee denying all rumors that he has agreed to withdrawal of his name. Page 10.

**Continental Shelf Plans**—The Interior Department is preparing to initiate a long-time exploration program to find out how much oil may be under the continental shelf, and will shortly ask Congress for funds to start the work, which will require many years and many millions of dollars to complete. Story below.

**Synthetic Rubber Revival**—With less natural rubber coming into the country than was anticipated last fall, RFC has ordered reopening of one of the plants producing butadiene from grain, an action which may lead to questioning from members of Congress not in sympathy with the government's restrictions on domestic consumption to provide additional supplies for Europe and who may want to know why the RFC didn't go to the oil industry if it needs additional synthetic rubber. Page 9.

**National Science Foundation**—Legislation for establishment of a National Science Foundation progressed a step during the week, with two Senate subcommittees agreeing upon legislation to be offered for consideration. Page 9.

**Ickes to Write Column**—Harold L. Ickes, whose 13 years as Secretary of the Interior was studded by feuds with newspaper columnists, commencing April 1 himself will write a tri-weekly column for the New York Post syndicate.

**AIME Petroleum Division**—New officers were installed, foreign oil developments discussed and several papers on petroleum technology and economics read at the 163rd meeting of AIME held this year in Chicago. Page 12.

**FPC Hearing**—Mid-Westerners at the FPC hearing in Chicago indicate their industries will be stymied unless they can get natural gas for fuel. Supply for all the evident demand questioned by some. Page 8.

**North Texas Convention**—Secondary recovery operations were stressed at the annual meeting of North Texas Oil and Gas Association and J. Pickens Coleman was elected president. Page 10.

**O'Mahoney Committee Hearings**—The last phase of the Senate Special Petroleum Committee's investigation of the oil industry will open March 19 with hearings on the "independent company." All who wish to be heard may testify, Chairman O'Mahoney has announced.

**API Estimates Reserves**—Gain in proven reserves of the United States is indicated in the annual API estimate made last week. Page 11.

### *Lessees Warned About Yearly Rental Payment*

The Interior Department last week warned its lessees that rentals for the current year must be paid if they are to benefit by last fall's legislation extending the term of five-year leases to December 31, 1946. Extension of leases—the third and probably the last—was provided because of war conditions, and the department pointed out that the law requires that rentals must be paid annually in advance.

## New Methods, Equipment and Much Money Needed for Shelf Exploration

An immediate start on the exploration of the nation's newly acquired territory in the continental shelf is planned by the Interior Department, which has prepared estimates of initial costs for submission to the Bureau of the Budget.

Department officials gave no indication of the sum needed, but guesses in Washington ranged from three-quarters to two million dollars. Eventual cost, however, will run into a very substantial sum, it was admitted, and many years will be required to do the job.

Since the continental shelf is to be the government's exclusive hunting ground, it will be necessary for the department not only to find what oil it may contain but to develop the means of getting it above water and on shore.

"Exploration for oil on the continental shelf beyond the three-mile limit will be a major undertaking," Acting Secretary Oscar L. Chapman said. "Only the government has the resources at its command to make such an exploration.

"Although the eventual cost may be large, there is every reason to believe that the cost will be recovered through the discovery of new sources of petroleum. Even if national safety was not at stake in finding new sources of oil, the economic prospects appear to justify the exploration program.

"It should be emphasized that this is a long-range project, that new equipment and methods must be devised and

## National Council Plan Dropped

**Plans for the formation of a National Petroleum Council as a peacetime successor to the Petroleum Industry War Council have been dropped because of lack of adequate endorsement.**

**On December 11, 1945, PIWC provided for the polling of all council members on the question of whether such a setup should be effected to "preserve the cooperative spirit of unity" developed by the industry during the war. A committee under the chairmanship of W. Alton Jones, president of Cities Service Company, addressed the queries to all PIWC members with the statement that unless 75 percent of those polled favored the national council plan, the attempt would not be made to continue any industry callaboration of the kind.**

**Of the 75 members polled, 46 declared themselves in favor of the national council creation, 22 voted against it, 2 were non-committal and 5 failed to reply.**

**Jones has communicated to all PIWC members that since the plan had not received endorsement from the needed 75 percent of the council, no further steps will be taken for its formation.**

employed, and that the area to be covered is of such a vast extent that years will be required before its eventual completion."

### *Last Minute Postponement For Oil Agreement Hearing*

The Senate Foreign Relations Committee late last week ordered an indefinite postponement of the hearings on the Anglo-American petroleum agreement scheduled for March 4, giving no further reason than that they would have "complicated other matters" probably the handling of the proposed $3.75 billion loan to Britain on which hearing is to start March 5.

The postponement was ordered at the request of the State Department which will be occupied with the loan hearings and is anxious to avoid anything that might interfere.

The request for delay was submitted to acting Chairman Walter F. George by the department through acting Petroleum Administrator Ralph K. Davies.

The announcement left high and dry opponents of the treaty whose advance men gathered in Washington last week to prepare for their presentation.

It is not expected now that the hearings will be held until the loan agreement is out of the way and the furore over the Pauley nomination has died down.

### *Want Oil Dropped When OPA's Life Is Extended*

Possibilities that administration officials may shortly turn their attention to the oil supply situation with a view to determining whether the time has come for the lifting of price controls are seen in current reports in Washington.

As a result of price increases granted by OPA, the kerosine and distillate situation has eased off, although residual fuel oil remains tight.

Reconversion Director John Snyder is understood to have said that he may have an opportunity to consider oil toward the end of this month, and OPA is reported to be preparing to discuss the situation with industry representatives not yet named.

It was reported that Snyder had asked Deputy Administrator Ralph K. Davies to make a study of current production early last month, but that the inquiry had to be dropped because there is no adequate staff remaining in PAW.

Industry men in Washington believe that OPA may be considering the lifting of oil price controls, but do not expect any action to be taken until after the end of the heating season.

The views of OPA officials on the subject probably will be disclosed when the question of oil is reached by the House Banking and Currency Committee some ten days hence. At that time, industry representatives will ask the committee, in continuing OPA until June 30, 1947, to require that oil control be dropped.

Members of the Texas delegation in congress met last week and heard Texas oilmen set forth reasons why price controls on oil should be lifted. The Texas oilmen were headed by W. L. Stewart of Fort Worth.

Representative Ed Gossett, Wichita Falls, said: "We feel in certain commodities at least where production is greater than demand, like oil, cotton, and others that there is no longer any need for price controls."

# Mid-Westerners Insist on Natural Gas In Ample Supply for Industrial Growth

Where is all this natural gas going to come from?

This pertinent question has been asked on several occasions by those parties unfriendly and uneducated to all the ramifications of the gas industry during the "consumers" hearing in Chicago by the FPC in its natural gas investigation.

Perhaps it may be dismissed as propaganda when the question is asked again and again by such intervenors as Leland Richardson, special counsel for Louisiana, but when the laymen in this natural gas consumer area asks it, the natural gas industry should provide an answer.

The difficulty, as far as the FPC hearing record goes, is that this 64-dollar question is asked by Richardson of witnesses who are not sufficiently informed about natural gas matters to give a sound answer. The layman's question is off the record, with the result that those who know the answer do not have an opportunity to have their answer included in the record.

A typical instance is the story printed by a Chicago newspaper in which the suggestion was made, despite the fact that testimony has been given during the FPC hearings to the effect that there is at least a 35-year supply of natural gas at 1944 rates of consumption, that the demand being made by all the consumer states at the hearing for more gas would indicate that if these demands are to be met the existing supply will play out in a relatively short time.

#### Reserves Cited

Here is the industry's answer: Dr. E. DeGolyer, in his testimony at the opening hearing at Kansas City, estimated the proven natural gas reserves of the nation as of January 1, 1944, at 140 trillion cubic feet, and on the basis of 1944 consumption—about 4 trillion cubic feet—the supply would last for some 35 years.

The industry points out that 1944 was a war production year and the consumption of natural gas was at an abnormally high rate; that this consumption figure will drop for normal peacetime years, and that although undoubtedly there will be a material increase both in the domestic and industrial uses of natural gas (as compared to prewar years) the amount of natural gas that will be used in each of the next five years probably will not be greater than it was in the war year of 1944. Added to that, the industry points out, is the fact that additional exploration will raise the reserve estimate given by Dr. DeGolyer as of January, 1944. The ultimate outcome will be that, as of any date in the present year, the consumption rate compared with the present reserves would still result in a natural gas reserve life of approximately the same amount—35 years.

There is no doubt from the testimony given so far, that the demand for natural gas in the Mid-West section is increasing constantly. Those who have it want more. Those who do not have it, want it. Illinois, Indiana, Iowa, Michigan, and Minnesota have sent witnesses to the hearing to make it plain to the FPC that they do not want restrictions placed in the path of their obtaining all the natural gas they want to use. And they want lots of it. Even Wisconsin, which now has a special tax on the importation of natural gas, has sent a sizeable delegation to this hearing to urge that the state be given natural gas. (They contend that the special tax will be wiped out soon, and even if it is not, they want natural gas, because it is cheaper and more economical than the artificial gas they are now using.)

#### Industries at Stake

The Mid-Westerners, although of course interested in obtaining adequate natural gas supplies for domestic heating purposes, in this hearing have shown a tremendous interest in the availability of natural gas for their industries. Several of the witnesses have contended that if they had to decide on a "superior" use of the fuel, they would maintain that the industrial use is a "higher use" than the domestic use. They hold that unless adequate amounts of natural gas are provided, their industries will be stymied. This theory of "superior" end use is somewhat new, because up to this hearing no one has suggested that there was any more "superior" use for gas than for domestic purposes. The people of this area, however, appear to be primarily interested in the advancement of their industrial growth. Apparenlty, they have decided they can get along in their homes with other fuels, if that is necessary.

They do not subscribe, however, to the proposition that it is necessary to make this choice. They want gas for both industry and home, and contend that there are ample supplies for both.

Several witnesses, in this connection, have cited the possibility of atomic energy being available as a fuel for all purposes before the present reserves of natural gas are exhausted. This idea seems to be catching on, due, no doubt, to the fact that in recent months many of those who worked on the atomic project have indicated that the time is not far off when atomic energy will be available as an everyday fuel.

### *Farbenindustrie Rebuilding, Witness Tells Committee*

I. G. Farbenindustrie, supposedly in the process of disintegration, actually is rebuilding, in part with the aid of materials and equipment which are being sent to other plants from facilities which are being dismantled and demolished, the Senate Mobilization Subcommittee was told February 25 by Russell A. Nixon, former acting director of the division of investigation of cartels and external assets in the Office of Military Government in Germany.

Not only has the German chemical trust not been eliminated as it was ordered to be, Nixon charged, but no decartelization law has been promulgated and the denazification program is incomplete.

He testified that the Four Powers had failed to develop a satisfactory definition of cartel; that the other three powers kept Russia from searching for German assets in Spain, Portugal, Switzerland, Sweden and Argentina which might have revealed Fascist collaboration with certain interests in Allied countries; that synthetic-rubber plants are being kept in operation; and that failure to carry out the Potsdam program was due to both the State Department and industrialists in the military government who argued against denazification more vigorous than that practised by the British.

Nixon thought that there would be no German decartelization unless the State Department instructs General Clay to urge the British government to reconsider its position; that Germany can never be economically disarmed until her industrial trusts and her external cartels are destroyed.

### *Compact Speaker*

Governor Ben Laney of Arkansas will be among those to address the Interstate Oil Compact Commission quarterly session scheduled in Tulsa April 11-12.

### Well Planned Six Miles Out in Gulf

**Louisiana Conservation Department last week granted Magnolia Petroleum Company a permit to drill six miles out in the Gulf on one of several tracts leased the company last year in an area extending 30 miles from shore. Location is in block 58 of a 50,000-acre square, south of Point au Fer, 7260 feet south of the north line of the block and 660 feet east of its west line.**

**The block was one of several on which Magnolia was successful bidded last August totaling 129,023 acres for $660,597 in cash, half that annually in rentals and royalties that could reach approximately $15 million.**

**The Mineral Board leased the underwater land under a 1939 state act declaring that the old three-mile boundary was set because of the range of cannon and that modern artillery can now make a state's authority effective 10 times that far.**

# Oil Industry Studies Krug's Record On Basis of TVA and WPB Activity

Carefully avoiding the pitfalls of friendship and politics which led to the "Pauley incident," President Truman last week named Julius A. (Cap) Krug to succeed Harold L. Ickes as Secretary of the Interior. Krug will take over his new post March 15. The nominee could be tagged neither as connected with the oil industry, a New Dealer or an ultra-conservative.

Following the example of his predecessor, Truman though back to the old-line control agencies from which President Roosevelt got several of the men who took over agencies which, for one reason or another, had become involved in difficulties.

Krug, whose 38 years will materially lower the average age of the President's cabinet, spent his first eight years after leaving college in the employ of the Wisconsin Telephone Company and the Wisconsin Public Service Commission. He came to Washington in 1936 as a public utilities expert with the FCC, left the following year to reorganize the Kentucky Public Service Commission and then returned to the government as chief power engineer of TVA.

In 1941, Krug became chief power consultant of OPM (later WPB), and in 1943 he took over the WPB Office of Public Utilities. He left the WPB to join the Navy as a lieutenant commander, but was brought back after a few months to solve a controversy between WPB Chairman Donald Nelson and Executive Vice Chairman Charles E. Wilson by taking over the former's job. After V-J day he stepped out of government service, refusing a $75,000-a-year job in the motion picture industry to serve as a consultant to industrial concerns.

It was agreed there would be no serious fight against his confirmation although Western-bloc Senators, while praising Krug, expressed dissatisfaction with the President's failure to consider the West.

**From the standpoint of the oil industry, Krug must be weighed in the light of his TVA experience and his all-out advocacy of public power projects—which Ickes also favored, but under Interior rather than authority administration—against his record in the WPB, where he repeatedly expressed concern lest industry lose some of its competitive freedom.**

The Interior Department has gained importance because of the concern over natural resources, its development of synthetic fuels and its responsibility for the continental shelf, etc.

Political implications: A very young man, as political age goes, Krug steps into a spot which may well be the jumping-off place, for a try at higher things.

### *Synthetic Rubber Demand For Year on the Increase*

Rubber industry representatives in Washington have expressed belief that synthetic production this year may have to be raised at least 300,000 and possibly as much as close to 500,000 tons to offset the failure to receive natural rubber in anticipated quantities and to permit the automobile tire industry to make headway against the tremendous demand which has piled up and which, so far, has not even been dented.

Receipts of natural rubber from the Far East may be considerably less even than is now estimated due to the effects of revolutions and unrest in the Dutch East Indes and other areas.

It is also expected that the great bulk of the additional synthetic will have to come through the petroleum industry because of the world shortage of foodstuffs. The government has a big surplus of alcohol which it will be glad to dispose of for rubber production, but there will be little grain for the making of alcohol once the program for channeling all surpluses to Europe gets under way.

### *Say $33 Million Needed For Science Foundation*

Establishment of a National Science Foundation to guide the Nation's scientific research was recommended February 27 in reports by subcommittees of the Senate Military Affairs and Senate Commerce Committees.

The two subcommittees estimated that it would cost $33 million to get the program under way and $122 million for its conduct in the fifth year of operation. An appropriation of $40 million was recommended by President Truman in the budget submitted to Congress in January.

Arguing that present provision for research is not adequate to meet the needs of the Nation, the Military Affairs Subcommittee asserted that "the evidence is clear that America's industrial pre-eminence in the modern world will be transitory unless it is strengthened by a firm foundation of basic scientific research, which can be supplied only by a general federal program of the excellent scientific activity now being conducted in the diverse private and public scientific facilities of the Nation."

The proposed federal agency would operate no facilities of its own, but would "support science through existing facilities, primarily those of universities, government laboratories, and other nonprofit institutions which are recognized to be public centers of research and training."

The program would involve the maintenance and promotion of scientific freedom for the individual scientist, combined with the encouragement of local initiative by educational and research organizations.

# Pauley Continues Fight for Navy Post—or Vindication of His Name

Determined to vindicate his character, Edwin W. Pauley at the week-end was adamant in his determination not to permit withdrawal of his nomination to be Undersecretary of the Navy.

Pauley made his position clear in a statement responding to a suggestion that a difficult situation could be saved by his withdrawal, telling the Senate Naval Affairs Committee that "my record, my character and my integrity have been, and still are being smeared by scurrilous and unwarranted attacks.

"I intend to stay this and vindicate my character because I know I am right," he declared.

Despite the oilman's refusal to withdraw his name, it was believed in some quarters that if the committee clears him and makes a favorable recommendation he may feel that he has been vindicated so forthrightly as to permit him to relinquish the post to which he was named so as to avoid debate in the Senate which might be embarassing to President Truman.

Much of the time last week was spent in exploring alleged activities of Pauley in raising money for the 1944 presidential campaign and his switching of position on the California production control legislation in 1939 as related by John A. Smith of Los Angeles, president of Independent Petroleum and Consumers Association of California. Pauley had asserted that he had never opposed the Atkinson conservation measure but Smith declared that Pauley was associated with him in actively fighting the bill, then suddenly shifted to support of the measure.

Pauley earlier demanded a public apology from Republican Senator Charles W. Tobey of New Hampshire, for a "foul, irrational and malicious" charge concerning prewar sales of oil to Japan. No Petrol Corporation oil went to Japan after June, 1938, he said.

It has been considered all along that Pauley was more concerned with clearing his name of the charges leveled against him by Senator Tobey and others than of gaining the Navy post. Pauley now has little hope of becoming Secretary of the Navy, the job to which his appointment was the preliminary step.

The Pauley "incident" has led directly to the resignation of Secretary Ickes, killed the chances of Deputy Administrator Ralph K. Davies for any important government post, played into the hands of government in its suit to get title to the California tidelands by "putting the heat" on the quitclaim legislation passed by the House and now pending before the Senate Judiciary Committee, and provided ammunition for the coming Republican congressional campaigns, incidentally intensifying heated political situation in California.

## *Taxing Power Suggested As Control for Inflation*

Use of taxing power to curb inflation, together with continuance of the price control authority until June 30, 1947, was urged by the Committee for Economic Development February 28.

CED recommended that existing tax rates be maintained and an effort made to balance the federal budget at those rates during the coming fiscal year, but "if strong inflationary pressure persists after high output and employment have been reached, taxes should be raised to generate a surplus."

With the use of tax controls, the committee suggested that money be tightened to immobilize most of the federal securities owned by banks by raising reserve requirements, thus preventing undue expansion of commercial loans.

CED recommended that standards for price relief be liberalized, with the minimum earnings standard for industry-wide price revision raised about one third above the present level which, it pointed out, is the average return on net worth, before taxes, in the unprosperous years 1936-39. Prices of individual products, it said, should be raised if they fail to cover average total costs not, as at present, average direct costs only.

Some viewed the CED report with misgivings as offering potentialities of heavy spending by Congress should its taxing recommendations be followed and a budget surplus developed.

## *Speed Asked in Disposing Of War Industrial Plants*

Criticizing the slowness with which government agencies are declaring surplus industrial plants, Senator Joseph C. O'Mahoney of Wyoming demanded last week that selling or leasing war industrial facilities be speeded up.

O'Mahoney released a report for the Military Affairs Committee showing that as of January 31 only 495 out of 1540 government-owned plants had been released, representing an investment of $2.8 billion out of a total of $11.2 billion. On that date, too, only 171 plants had been disposed of, 130, representing an investment of $181 million, having been sold, and 41, totaling $213 million, leased, leaving approximately 96 percent of the original investment still in the hands of the Government.

"It would be a very easy thing, with the government owning more than 50 percent of U. S. industrial facilities, for the government to retain ownership and operate the plants, but the Congress and the people of the United States have, apparently without material exception, been of the opinion that these plants should be used by free private competitive industry," O'Mahoney declared.

## *Coleman Named President Of North Texas Oil Group*

Expansion of secondary-recovery operations to assure the maximum yield of the numerous shallow fields in North Texas was urged at the annual meeting of North Texas Oil and Gas Association held at Wichita Falls March 2. The Association has instituted a campaign to stimulate operations of this nature, and was instrumental in a special survey being conducted by the United States Bureau of Mines.

J. Pickens Coleman, Wichita Falls operator, was installed as president succeeding Ed. G. Kadane, while E. B. Clark will serve as vice president. Fred Sehmann was retained as executive vice president.

While considerable progress has been made in water flooding and the application gas repressuring of the shallow sand and lime areas, the Bureau of Mines report revealed that the district affords numerous fields that are suitable for profitable secondary-recovery operations.

The economics of secondary recovery and various problems involved were explained by representatives of Pennsylvania Grade Crude Oil Association. W. E. Heath, petroleum tngineer for Phillips Petroleum Company, Bartlesville, Okla., and K. B. Nowels, consulting petroleum engineer of Abilene, Texas, both specialists in secondary recovery made talks.

The crude oil outlook was discussed by Dr. Richard J. Gonzalez economist for Humble Oil & Refining Company, Houston.

Major B. A. Hardey, president of IPAA, guest speaker, urged immediate removal of price restrictions on petroleum products by OPA since scarcity exists in this commodity. He stated that imports of foreign crude has attained an all-time high in recent weeks, and that the domestic oil industry will be confronted with a flooded market unless import restrictions are imposed by Congress.

"This development endangers the security of the independents who are burdened with high production costs without receiving a corresponding price increase," he added.

Taking note of the rising stocks of crude reported by some states, the speaker recommended that the regulatory bodies should maintain production quotas that are comparable with consumptive demand.

## *Higher Pipe Costs*

Much higher prices for oil country tubular goods and oil industry steel-product needs generally were in prospect at the weekend, following issuance by OPA of an order raising steel prices $5 per ton on the average to offset the effect of the 18½-cent wage increase.

Only the basic prices were dealt with in the order, OPA officials having advised fabricators that their problems would be dealt with later.

## Crude Oil Production in the United States

(Estimates compiled by the OIL WEEKLY. All figures indicate daily averages in barrels.)

| STATE OR DISTRICT | PRODUCTION IN WEEK ENDED March 2 | February 23 |
|---|---|---|
| Alabama | 950 | 950 |
| Arkansas | 77,400 | 77,350 |
| California | 848,200 | 842,800 |
| Colorado | 23,450 | 23,500 |
| Florida | 100 | 100 |
| Illinois | 214,500 | 211,700 |
| Indiana | 16,300 | 15,700 |
| Kansas | 257,050 | 253,650 |
| Kentucky | 30,450 | 30,300 |
| Louisiana | 370,050 | 368,350 |
| North Louisiana | 81,200 | 79,500 |
| South Louisiana | 288,850 | 288,850 |
| Michigan | 44,850 | 44,350 |
| Mississippi | 55,100 | 52,850 |
| Missouri | 100 | 100 |
| Montana | 19,100 | 19,150 |
| Nebraska | 850 | 850 |
| New Mexico | 98,400 | 98,450 |
| New York | 13,300 | 13,450 |
| Ohio | 7,400 | 6,100 |
| Oklahoma | 389,450 | 390,050 |
| Pennsylvania | 32,800 | 36,150 |
| Tennessee | 35 | 35 |
| Texas | 2,109,500 | 2,109,800 |
| Upper Gulf Coast | 544,000 | 544,000 |
| East Texas Field | 321,450 | 321,600 |
| Rest of Eastern Texas | 146,000 | 145,950 |
| Southwest Texas | 356,050 | 356,100 |
| West Texas | 503,300 | 503,400 |
| North Texas | 157,700 | 157,750 |
| Panhandle | 81,000 | 81,000 |
| West Virginia | 8,000 | 7,300 |
| Wyoming | 101,000 | 100,200 |
| Total United States | 4,718,335 | 3,703,235 |

**BUREAU OF MINES REPORT**

Total stocks, foreign and domestic, February 23, as reported by the Bureau of Mines were 226,699,000 barrels with a daily average production of 4,714,000, and runs to stills 4,595,000.

## *Tank Car Shipments from West Texas Show Big Gain*

Tank car shipments of crude from West Texas may be restored to a substantial volume as additional refinery owners canvass the district for crude supplies. Rail movement has been largely restricted to Post area, Garza County, since the termination of the wartime transportation subsidy last fall, but may be expanded to the Gulf Coast since no appreciable space is available in the direct pipe line outlets.

Eastern States Petroleum Company, owner of a refinery at Houston, is attempting to supplement its 10,000 barrels daily contracted purchases in West Texas with an additional 5000 barrels daily to be moved by tank cars. A deal is pending for a minimum of 2500 barrels daily. Cities Service Oil Company is a prospective shipper in attempting to meet the crude deficit of its Lake Charles, La. refinery. The latter owns 10 percent interest in The Texas New Mexico Pipe Line Company's carrier, but filled its allotted space quota in contracting for 4500 barrels daily of Devonian oil from Winkler and Ector counties from Shell Oil Company.

Crude shipments by rail from the Post area have ranged from 2100 to 3700 barrels daily this year. Scurlock Oil Company gathers and markets the oil. An average of 1985 barrels daily has been dispatched to the Co-Operative Refiners Association at McPherson, Kansas, since early in January. Rail shipments to the British-American Oil Company's Moose Jaw, Canada, plant were terminated January 1.

# API Makes Reserves Estimates

EVEN with crude oil production at an all-time peak and drilling hampered by wartime restrictions during most of the year, the oil industry of the United States found more than 2 billion barrels of new oil reserves during 1945, according to the annual report of the American Petroleum Institute Committee on Petroleum Reserves, J. Edgar Pew, chairman.

The committee's estimate of proved petroleum reserves for the United States at the end of 1945 was 20,826,813,000 barrels as compared with 20,453,231,000 barrels a year ago. The estimate raises U. S. crude reserves to the largest quantity in history.

Of the 2,110,299,000 barrels of new reserves found during 1945, the committee estimated that discovery of new pools accounted for 419,984,000 barrels; extension of old pools 1,441,424,000 barrels; and previous estimates were revised upward by 248,891,000 barrels. The new reserves compares with 1,736,717,000 barrels of crude oil produced during 1945, making the net gain in reserves amounting to 373,582,000 barrels. This is slightly under the net gain of 389 million barrels in the proved oil reserves made during 1944.

During the four war years, the United States oil industry has succeeded in increasing the nation's proven oil reserves by 1,237,517,000 barrels. This was achieved in face of record production for the war effort and curtailed operations because of restrictions.

Texas again led the states in the total amount of new reserves blocked out at 11,470,294,000 barrels. California's reserves were increased slightly to 3,409,948,000 barrels, while reserves in Oklahoma, Kansas and New Mexico showed decreases.

The committee's estimates, it was explained, refer solely to proved or blocked-out reserves of crude oil, including condensate (produced as a result of condensation of reservoir gases) produced as oil on the lease or through cycling plants. They include only oil recoverable under existing economic and operating conditions. In pervious years this condensate has been included in the committee's total estimate of reserves. Thus, in the 20,453,231,000 barrels as of December 31, 1944, 668,701,000 barrels were condensate. The 20,826,813,000 barrels as of December 31, 1945, include 884,967,000 barrels of condensate.

The estimates do not include: casinghead gasoline extracted at natural gasoline plants (probably will be available next year); oil under unproved portions of partly developed fields; oil in untested prospects; oil that may be present in unknown prospects in regions believed to be generally favorable; oil that may become available by secondary-recovery methods from fields where such methods have not yet been applied; oil that may become available through chemical processing of natural gas; or oil that can be made from oil shale, coal, or other substitutes.

"Proved reserves are both drilled and undrilled," the report says. "The *proved drilled reserves,* in any pool include the oil estimated to be recoverable by the production systems now in operation, whether primary or secondary, and from the area actually drilled up on the spacing pattern in vogue in that pool. The *proved undrilled reserves,* in any pool, include reserves under undrilled spacing

## Estimated Proved Petroleum Reserves in the United States (API)

(Barrels of 42 U. S. Gallons)

| | Proved Reserves As of December 31, 1944 (1) | Changes in Proved Reserves Due to Extensions (New Oil) and Revisions During 1945 (2) | Proved Reserves in New Pools Discovered in 1945* (3) | Production During 1945 (Estimated) (4) | Proved Reserves As of December 31, 1945 (Columns 1+2+3 Less Column 4) (5) |
|---|---|---|---|---|---|
| Alabama | 317,000 | 639,000 | ..... | 171,000 | 785,000 |
| Arkansas | 293,059,000 | 38,401,000 | 810,000 | 28,596,000 | 303,674,000 |
| California | 3,344,552,000 | 328,586,000 | 63,254,000 | 326,444,000 | 3,409,948,000 |
| Colorado | 88,823,000 | 175,971,000 | ..... | 4,964,000 | 259,830,000 |
| Illinois | 320,714,000 | 92,833,000 | 11,221,000 | 75,148,000 | 349,620,000 |
| Indiana | 31,493,000 | 13,597,000 | 1,009,000 | 4,856,000 | 41,243,000 |
| Kansas | 601,751,000 | 26,252,000 | 10,165,000 | 96,322,000 | 541,846,000 |
| Kentucky | 41,080,000 | 22,815,000 | 3,169,000 | 10,343,000 | 56,721,000 |
| Louisiana | 1,573,387,000 | 204,609,000 | 47,550,000 | 135,765,000 | 1,689,781,000 |
| Michigan | 65,134,000 | 16,023,000 | 304,000 | 17,275,000 | 64,186,000 |
| Mississippi | 209,011,000 | 69,292,000 | 7,659,000 | 18,802,000 | 267,160,000 |
| Montana | 111,650,000 | 4,633,000 | 535,000 | 8,344,000 | 108,474,000 |
| Nebraska | 581,000 | 221,000 | ..... | 302,000 | 500,000 |
| New Mexico | 562,564,000 | (—)20,763,000 | 7,933,000 | 37,361,000 | 512,373,000 |
| New York | 85,831,000 | ..... | ..... | 4,642,000 | 81,189,000 |
| Ohio | 31,624,000 | 907,000 | ..... | 2,850,000 | 29,681,000 |
| Oklahoma | 970,262,000 | 35,621,000 | 22,175,000 | 138,219,000 | 889,839,000 |
| Pennsylvania | 123,138,000 | ..... | ..... | 12,537,000 | 110,601,000 |
| Texas | 11,375,480,000 | 628,895,000 | 241,207,000 | 775,288,000 | 11,470,294,000 |
| West Virginia | 40,755,000 | 750,000 | ..... | 2,875,000 | 38,630,000 |
| Wyoming | 581,730,000 | 50,933,000 | 2,993,000 | 35,525,000 | 600,131,000 |
| Miscellaneous† | 295,000 | 100,000 | ..... | 88,000 | 307,000 |
| Total United States | 20,453,231,000 | 1,690,315,000 | 419,984,000 | 1,736,717,000 | 20,826,813,000 |

* Only a limited area is assigned to each new discovery even though the committee may believe that eventually a much larger area will produce, for in this report the concern is only with actually proved reserves.
† Includes: Florida, Missouri, Tennessee, Utah and Virginia.

units which are so close, and so related, to the drilled units that there is every reasonable probability that they will produce when drilled.

"In the case of new discoveries, which are seldom fully developed in the first year and in fact for several years thereafter, the estimates of proved reserves necessarily represent but a part of the reserves which may ultimately be assigned to the new reservoirs discovered each year. For a one-well field, where development has not yet gone beyond the discovery well, the area assigned as proved is usually small in regions of complex geological conditions, but may be larger where the geology is relatively simple. In a sparesely drilled field the area between wells is only considered to be proved if the information regarding the geology of the field and the productive horizon is adequate to assure that such area will produce when drilled. The total of *new oil* through discovereis estimated as proved in any given year is comparatively small and the total of *new oil* through extensions is comparatively large. As knowledge of the factors affecting production and well performance become available, and as these factors are studied, reserves in older fields can be estimated with greater precision and revised accordingly. Therefore, the oil assigned to new discoveries, plus the oil proved through extensions, comprises the total quantity of new proved reserves for the year."

The committee's estimates of proved reserves "cannot be used as a measure of the rate at which these reserves can be produced with or without physical waste," it was declared. "Oil cannot be produced from the permeable rocks in which it occurs at any desired rate, because the flow of oil through the pores of the oil-bearing rocks is definitely controlled by the physical factors of the reservoir. As a matter of fact, today's *known oil* can be recovered only over a period of many years and at gradually declining annual rates. This has been widely demonstrated by past performance under all kinds of operating conditions. Therefore, only incorrect conclusions as to the life of these estimated reserves can be obtained by dividing these reserves by current production rate."

Every effort has again been made to secure a fair, unprejudiced, and representative opinion, the report declared, explaining that each member in his district appointed a number of subcommittees to gather and study data.

"All previously determined factors pertaining to the various pools were examined and adjusted in the light of new information," it said.

# AIME Sessions

## Petroleum division hears economics and technological papers, conduct forum on foreign petroleum activities and name officers for year at successful Chicago meet

By L. J. LOGAN, Associate Editor

A TALK on the "Industrial Possibilities of Atomic Energy" was among the special features of the program of the petroleum division at the annual meeting of the American Institute of Mining and Metallurgical Engineers in Chicago February 25 to 28. This talk was given at the petroleum division's annual dinner by E. R. Gilliland, professor of chemical engineering, Massachusetts Institute of Technology.

Regular sessions of the petroleum division included presentation of a group of papers dealing with current progress in petroleum technology, important subjects in petroleum economics, and current developments in foreign and domestic production.

Herbert F. Beardmore, chief engineer, Barnsdall Oil Company, Tulsa, was installed as chairman of the petroleum division at the division's annual dinner. He had been elected by mail ballot last fall, and will serve during the coming year, succeeding M. L. Haider, of Standard Oil Company (New Jersey), New York. Other officers for the coming year include C. R. Hocott, production research engineer, Humble Oil & Refining Company, Houston, associate chairman of the petroleum division; Charles B. Carpenter, U. S. Bureau of Mines, Dallas, regional chairman; Charles H. Keplinger, Keplinger & Wanamaker, Tulsa, regional chairman; and Carlton Beal, Jr., Richfield Oil Corporation, Los Angeles, secretary-treasurer.

Newly elected chairmen of standing committees of the petroleum division are H. H. Kaveler, Phillips Petroleum Company, Bartlesville, chairman for papers and programs; John S. Bell, Humble Oil & Refining Company, Tyler, Texas, chairman for production engineering; Gail F. Moulton, Chase National Bank, New York, chairman for production statistics; John D. Gill, director; The Atlantic Refining Company, Philadelphia, chairman for economics; John E. Sherborne, Union Oil Company of California, Santa Fe Springs, chairman for engineering research; Walter Miller, Continental Oil Company, Ponca City, Okla., chairman for refinery engineering; Donald L. Katz, University of Michigan, Ann Arbor, chairman for education; Paul Weaver, Gulf Oil Corporation, Houston, chairman for geophysics; Edgar Kraus, The Atlantic Refining Company, Dallas, chairman for production geology; Alfred W. Waddill, Houston Oil Field Materials Company, Houston, chairman for membership.

At the annual banquet of the AIME, the new president of the institute was introduced. He is Louis Shattuck Cates, prominently identified with copper mining during his entire professional career, and president of the Phelps Dodge Corporation since 1930. He succeds Harvey S. Mudd.

### Future of Atomic Power

It probably will be many years before atomic power is developed to the point of representing any real competition to fuels currently supplied by the petroleum industry, in the opinion of Dr. Gilliland, a prominent, youngish chemical engineer who is familiar with the development which culminated in the dropping of the three atomic bombs.

It is possible, he said, that some industrial utilization of atomic power will be developed within the coming decade. But he expects this use to be limited at first to pioneer stationary power plants, built in secluded locations and to large naval vessels and submarines. Power companies will not rush in to build such plants during the next 10 years, however, and even this most feasible industrial utilization of atomic energy will be slow to develop.

Nevertheless, there should be early and continued development along this line, in order to maintain U. S. leadership in application of atomic energy, Gilliland believes. He also favors serious attempts to install atomic power facilities on the naval vessels and submarines, in which it would greatly simplify the problem of refueling, permitting the making of long voyages without need for taking on more fuel.

Even in these feasible uses of atomic power, the costs will be very high initially, although private companies can perhaps cut costs to one fourth of those involved in the atomic bomb development. The costs alone will limit the application even for stationary power plants, and presumably may require government participation in the financing of development. And the high cost likewise will initially limit use on ships to the naval vessels.

Notwithstanding the imaginative stories about future automobiles driven by

### Summary of API Committee's Report Covering Period 1937-1945

(Barrels of 42 U. S. Gallons)

| YEAR | New Oil Blocked Out During Year: Through Revisions of Previous Estimates & Extensions to Known Fields | New Oil Blocked Out During Year: Through New Pools Discovered During Year | New Oil Blocked Out During Year: Total Through New Discoveries, Extensions & Revisions | Production During Year | Estimated Proved Reserves As of End of Year | Increase Over Previous Year |
|---|---|---|---|---|---|---|
| 1936 | ..... | ..... | ..... | ..... | 13,063,400,000 | ..... |
| 1937 | 2,792,790,000 | 928,742,000 | 3,721,532,000 | 1,277,664,000 | 15,507,268,000 | 2,443,868,000 |
| 1938 | 2,243,571,000 | 810,493,000 | 3,054,064,000 | 1,213,186,000 | 17,348,146,000 | 1,840,878,000 |
| 1939 | 2,058,455,000 | 340,667,000 | 2,399,122,000 | 1,264,256,000 | 18,483,012,000 | 1,134,866,000 |
| 1940 | 1,607,012,000 | 286,338,000 | 1,893,350,000 | 1,351,847,000 | 19,024,515,000 | 541,503,000 |
| 1941 | 1,538,989,000 | 429,974,000 | 1,968,963,000 | 1,404,182,000 | 19,589,296,000 | 564,781,000 |
| 1942 | 1,618,925,000 | 260,051,000 | 1,878,976,000 | 1,385,479,000 | 20,082,793,000 | 493,497,000 |
| 1943 | 1,202,368,000 | 282,418,000 | 1,484,786,000 | 1,503,427,000 | 20,064,152,000 | (—)18,641,000 |
| 1944 | 1,556,192,000 | 511,308,000 | 2,067,500,000 | 1,678,421,000 | 20,453,231,000 | 389,079,000 |
| 1945 | 1,690,315,000 | 419,984,000 | 2,110,299,000 | 1,736,717,000 | 20,826,813,000 | 373,582,000 |

"pills" of atomic energy, such application was ruled out by Gilliland. As of now, he explained, the "pill' would have to be at least a two-foot cube of concentrated materials involved in the necessary reactions. And this cube would have to be surrounded on every side by an eight-foot thickness of concrete constituting the shield necessary to control the reactions and to confine poisonous gases and dangerous radiations. All of the materials in the cube would be very expensive, and aside from being ridiculously burdensome for an automobile, the installation would cost thousands of dollars, besides which there would be prohibitively expensive refilling of the materials producing the atomic energy.

In any application of atomic energy, Gilliland said, there will be several other serious problems:

**Difficulties Cited**

1. The installation must be semi-automatic, so as to reduce to a minimum the hazards involved for persons working with it.

2. It is necessary to handle large masses of ores to obtain uranium in the form needed and in volumes necessary for the proper reactions.

3. The fires in uranium piles die out due to accumulation of impurities as the reactions occur, and it is necessary to have a purifying plant, operating semi-automatically because of personal hazards. Disposing of these impurities also poses a problem.

Uranium likely will continue as the most feasible source of atomic power for a long period, Gilliland stated, although processes may be worked out later to employ some of the other heavy elements that are more common. Uranium still has possibilities for economic mining, he said.

The ultimate goal of the scientists is to learn how to use as the source some of the lighter and plentiful elements, such as oxygen and hydrogen. In 100 years, Gilliland said, it may be possible to use hydrogen as the source, but that would require very high pressures and very high temperatures, which today cannot be attained.

**A symposium of foreign oil activities given at the AIME meeting appears in the adjoining column. Abstracts of the economic papers, presented at Chicago commence on page 14 and abstracts of petroleum technology papers are presented commencing on page 16.**

## Inside Track in Saudi Arabia

**American oil interests which hold concessions for the development of the Saudi Arabian reserves will continue to have an inside track in that country because relations between the government and the companies have been "very satisfactory," it was disclosed last week by Asad Al Faqih, first Saudi Arabian minister to be accredited to the United States.**

**The minister said the interest of his country in oil is to develop its resources "for whoever wants to buy it," but emphasized that development will be in the hands of the concessionaires and any new developments will be offered first to them.**

# AIME Foreign Production Symposium

A report outlining the increasing importance of the Saudi Arabia-Bahrein area of the Persian Gulf Region highlighted the symposium on foreign petroleum production developments held during the annual meeting of the AIME at Chicago.

Several papers scheduled for presentation unfortunately did not arrive in time, including those on such important countries as Venezuela, Iran and Argentina. These papers, however, are expected to be obtained in time to be published in the annual transactions of the Institiute covering 1945.

**Saudi Arabia-Bahrein Expands**

Significant developments occurred during 1945 in the Saudi Arabia-Bahrein area, which added to the territory's known reserves and increased current producing rates. One important new field, Qatif, was discovered, and an important extension was made to the Abqaiq field. Of outstanding interest, however, was the expansion of refining facilities to double their previous levels, and the laying of pipe lines to facilitate the movement of production to refineries. Since the producing rate of Saudi Arabia-Bahrein is strictly a matter of refining and transportation capacity, this was a development of world interest. Although production during 1945 was at an all-time peak, a substantially larger volume undoubtedly will be produced during 1946 because of these increased facilities. The report on this region was presented by J. Terry Duce, Arabian American Oil Company and is summarized as follows:

In Saudi Arabia, most of the work during 1945 was confined to reconditioning those wells cemented or completed originally with blank liners because of war conditions. Drilling continued during the year at Dammam. A new field was brought in in the Arab zone at Qatif where the No. 1 well was completed for 4000 barrels daily, of 37.5 gravity oil at a depth of 7510 feet, and No. 6 well at Abqaiq, the highest well in the field, was completed in February at 6175 feet, but was shut in without final testing because of lack of storage. Flow tests through formation testers indicate this will be a large producer. Only two other wells were completed in the Dammam field.

Statistics on Saudi Arabia fields show: Dammam, 3 wells drilling, 27 producing, with 1945 output (December estimate) 21,124,381 barrels; Qatif field, 1 producing well, with 169,160 barrels; Abqaiq, 1 well drilling, 4 producing, and 17,455 barrels output. This field has no pipe line connection. Abu Hadriya has one well shut down, and one completed well shut in.

No new wells were drilled in Bahrein, but wells cemented in as a war measure were reconditioned. This field has 62 producing wells, 8 shut in, and 4 observation wells. Prior to 1939 Bahrein produced 22,287,055 barrels of oil and during the war years averaged slightly under 7 million barrels yearly, with the 1945 total set at 7,308,938 barrels or 280,000 less than 1939. Accumulative through 1945 was 70,578,654 barrels.

Extensions to the Bahrein refinery were completed and production of 100-octane gasoline started in June. The crude oil line from Arabia was completed acros the Gulf of Salwa and Arabian crude is now delivered direct to the Awali plant of the Bahrein Petroleum Company, Ltd.

In Saudi Arabia pipe lines are under construction to Aqaiq from Dhahran and from Dhahran to Ras Tanura, where the refinery started its first unit into production in September, and the second in December. Throughput will exceed 60,000 barrels daily. Early in 1945 the pipe line from Dhahran through Khobar across the Gulf of Salwa to Bahrein went into operation thus eliminating the barge operation from Al Aziziyah to Zellaq.

**Record Output From Iraq**

Production of Iraq has risen steadily and sharply since 1941, according to a paper prepared by Iraq Petroleum Company. From 1,381,000 long tons in 1941, production climbed to 2,294,000 long tons in 1942, rose to 3,338,000 in 1943, to 3,932,000 in 1944; and then to 4,341,000 long tons in 1945.

Most of the 1945 production came from 5 wells in the central part of the Kirkuk field, the individual wells flowing 15,000 to 20,000 barrels each per day. As a war security measure, all but 8 wells in the center of the field were plugged. Following end of the war, redrilling of the plugged wells commenced. By the end of 1945, 14 wells were listed as producing and others as reservoir observation wells.

No development occurred during 1945 in the British Oil Development concessions west of the Tigris River in Southern Iraq. However, seismic work is being done in the Basrah district, near the Persian Gulf in extreme southeastern Iraq. Some drilling is expected to be done in this region in the near future.

**Increased Operations in Egypt**

The extensive geophysical program begun in 1937 only to be stopped by war developments in 1940 was renewed on January 1, 1945. Four major companies have been doing this work. They are Shell, Socony-Vacuum, Standard of New Jersey, and the joint operations of The Texas Company and Standard of California interests. Data justifies some drilling, although several wildcats drilled during 1945 resulted in dry holes.

Approximately 22 million acres are now held in petroleum permits in Egypt, of which 13 million acres are in the Western Desert, which lies west of the Nile River.

The seismograph has not resulted in too satisfactory records in Egypt, so

## *Louisiana Allowable Set*

A reduction of 6061 barrels in daily average production has been made in the Louisiana state allowable for March, with the total daily output limited to 406,454 barrels. North Louisiana is to be allowed 84,979 barrels, 1183 barrels below February, and South Louisiana allowable is 321,475 barrels, a cut of 4878 barrels daily as compared with February.

much of the geophysical work is being done with gravity meter and torsion balance instruments.

Annual crude production of Egypt, which was very important during the African war because of its strategic location, has increased sharply in recent years. During 1944, latest year for which final figures are available, output amounted to 9,431,000 barrels (about 26,000 daily), or almost exactly twice the 1939 rate. Most of the production has come from the Ras Gharib field in recent years.

### Canadian Results Disappointing

Wildcatting operations in western Canada continued at a brisk rate, but with disappointing results. The decline of production in the Turner Valley field and the closing of the Canol pipe line in March, 1945, caused a decrease in Canadian output, according to the report of G. S. Hume, geologist for oil controller of Canada. Whereas Canadian production amounted to 10,166,000 barrels in 1944, only 8,560,000 barrels were produced in 1945.

Production of the Northwest Territory, which means Norman Wells, dropped to only 355,000 barrels in 1945 after totaling 1,229,000 barrels in 1944. This was due to the closing of the Canol pipe line in March, and not the result of any decline in productivity capacity.

The fields of Alberta Province, of which Turner Valley is the largest, produced 8,055,000 barrels in 1945 in contrast with 8,788,000 barrels in 1944.

In March of 1945 the first oil production was found in Saskatchewan Province, when the Lloydminster field of Alberta was extended eastward across the boundary. Saskatchewan production in 1945 amounted to 15,000 barrels.

Eastern Canada continued to yield very small quantities. New Brunswick production in 1945 was 31,000 barrels as compared with 22,950 barrels in 1944. Ontario Province produced 113,000 barrels in 1945, a decline of 10,000 barrels from its 1944 level.

The Foothills area of western Alberta, which in 1944 received renewed attention following the discovery of the first oil in the Upper Mississippian limestone at Jumping Pond, received a setback during 1945. The second well at Jumping Pond, 4000 feet southwest of the discovery well, was 1000 feet low and found salt water. A well in the nearby Brazeau district went into the Cretaceous in drilling through a fault after having found what is thought to have been Mississippi limestone. The area is extremely tricky, and requires very extensive exploratory work.

### Extensive Exploration in Colombia

Columbia's production in 1945 totaled 22,866,000 barrels, according to a report by O. C. Wheeler, chief geologist, International Petroleum Company, Ltd. Of this amount, Tropical Oil Company produced 15,674,000 barrels, including 400,000 barrels of condensate, from its De Mares concession. Production of the Colombia Petroleum Company from its Barco concession amounted to 5,540,000 barrels. Shell Oil Company produced 1,600,000 barrels from its Casabe field, and the Socony-Vacuum and Tropical produced 45,266 barrels from their joint operations at Sinu.

Surface exploratory work was conducted on a very large scale. At the end of 1945, the large operating companies had 24 geological parties, 7 gravity meter parties, and 14 seismograph parties in the field.

Developments of the Tropical Oil Company included some extensions to the producing areas in the De Mares concession, the most important of which was the extension of Shell's Casabe field east across the Magdalena River. In the south end of the De Mares concession, deeper production was found in an old extremely shallow field.

Colombia Petroleum Company continued its expansion of the Barco concession. At the end of the year, Barco production was 16,500 barrels daily in contrast with an average of 15,000 barrels per day for the full year.

### Peru's Developments

Peru's production during 1945 was estimated by O. C. Wheeler at 13,963,383 barrels. The paper was read and supplemented by J. Elmer Thomas, who recently completed a tour of southern South America for THE OIL WEEKLY. Thomas said he had just received figures on actual production for the full year which showed Peru's 1945 output at 13,747,346 barrels.

Most of the country's production comes from the coast area between Talara and Tumbes. International Petroleum Company produces most of the oil.

The Ganso Azul field, highly important because of its location on the eastern slope of the Andes, produced 60,000 barrels during the year. It has 5 wells. The wells can make up to 5000 barrels daily each, but are limited to market needs which are very small in the region along the head waters of the Amazon River.

The government is conducting a wildcatting campaign in southern Peru in the vicinity of Pirin, an area that has produced some oil in previous years.

Thomas reported considerable interest among oil companies in the rumored liberalization of Peru's development laws.

### Deep Search in Ecuador

Crude production of Ecuador, all of which comes from the Santa Elano peninsula, amounted to 2,670,000 barrels, according to a paper prepared by B. F. Zwick, International Petroleum Company, but which also was read by J. Elmer Thomas.

International Ecuadorian Petroleum Company has been conducting a deep wildcatting campaign west of the Santa Elena producing area. One well was drilling below 11,300 feet in December. This is the deepest test in South America. During the past three years, the company has drilled 17 dry holes in this territory.

The most important development in Ecuador was Shell's operation in the eastern part of the country and east of the Andes Mountains. A very good showing of oil was encountered, and the company plans to drill two more wildcats in the immediate vicinity in the near future.

### Brazil Has Four Fields

Brazil's 1945 production was reported at 79,326 barrels by S. Froes Abreu, of the National Institute of Technology. All of the production came from four fields in the Bahia district. The oldest field, which is Lobatos, found in 1939, produced 6728 barrels. The Aratu field produced 6714 barrels, Candeis produced 36,663 barrels, and Itaparica produced 29,221 barrels. This output raised Brazil's cumulative output to 210,000 barrels. The fields are produced according to consumptive requirements of the immediate neighborhood.

# Abstracts of AIME Economics Papers

At two sessions of the petroleum division devoted to economics, six papers were presented, two on phases of the reserve situation, the other subjects being: productivity prices and sound wage levels; correlation of drilling rates with production requirements; the economic pattern of oil pipe lines; and the relative trends of foreign and domestic operations.

### Correlation of Drilling With Production Requirements

By BRAD MILLS, Executive Secretary, American Association of Oilwell Drilling Contractors.

Over a 10-year period at least a rough balance between drilling and production operations is automatically maintained. The number of wells required each year depends largely on the type of development that predominates. When two or more large undeveloped fields are in line for intensive activity, fewer wells are required than under random drilling operations. Concentration of drilling in proven areas at the expense of wildcatting, however, may result in a sharp drop in reserves.

General development programs are designed to: 1, overcome an actual oil shortage; 2, develop needed reserves; 3, maintain a balance between supply and demand; 4, meet national emergency requirements; 5, use capital from outside the petroleum industry.

The first four of these are normally carried out from year to year by the companies. The nature of one year's discoveries affects drilling operations the next. No definite relationship exists between the number of wildcat wells drilled each year and the amount of oil discovered.

Wildcatting is a more selective phase of operations than formerly. Operators must risk finding less oil with more exploratory wells than prewar.

The industry should steer clear of both exhaustion and overproduction hysterias. A large integrated company attempts to correlate its drilling each year with future production requirements. Hence, a company may drill actively in the face of what appears to be overproduction, because it is looking ahead two, three or five years; and conversely.

In 1941, when about 31,200 wells were completed, the maximum number of rotary rigs in operation at any time was 1275. In 1944, the number ranged from 1275 to 1850, averaging 1525; yet only 24,000 wells were completed. During 1945, from 1700 to 1800 rotary rigs were

## AIME Petroleum Division Officers

**AIME Petroleum Division officers, at the Chicago convention, are shown above, left to right: Herbert F. Beardmore, Barnsdall Oil Company, Tulsa, new chairman of the AIME petroleum division; Claude R. Hocott, production research engineer, Humble Oil & Refining Company, Houston, new associate chairman; and M. L. Haider, Standard Oil Company (New Jersey), New York, retiring chairman.**

in operation most of the year, and about 24,000 wells were completed.

The nearest possible approach to continuity of operation is needed. New locations should be made far enough ahead of completions to prevent a lull between wells. The industry must conduct its drilling operations on the premise that oil will be available, and must try to arrive at its own drilling program with supply and demand always the prime consideration. At present, factors indicate at least a normal drilling schedule should be maintained.

### Productivity, Prices, and a Sound Wage Level

By JOHN D. GILL, Director, and B. A. STAINTON, Research Assistant, The Atlantic Refining Company:

1. For several generations our economy, as measured by average per capita real income, has been growing geometrically—faster and faster. For several years before Pearl Harbor the rate approximated 2½ percent per annum.

2. It is axiomatic that maximum economic growth is a prerequisite of individual well-being and national security.

3. Maximum economic growth requires the maintenance of equilibrium between productivity, prices, and wages.

4. Disequilibrium permits wasteful booms and causes disastrous depressions.

5. The so-called "productivity of labor" when used to indicate change in the output of an industry creditable directly to production workers is a misnomer and incapable of accurate measurement.

6. Because "productivity of labor" in a specific industry is incapable of accurate measurement, it cannot be used wisely to determine appropriate changes of remuneration in that industry. This is a sufficient reason for non-use of single industry "productivity of labor" calculations in wage-rate changes. But there is a still more important reason, namely:

7. The productivity increases of the vigorously growing (usually newer mass production) industries must be shared, in effect, to compensate for the slower growth or productive retrogression of the decadent (usually older, handcraft) industries.

8. Only over-all or national productivity can be measured with a sufficient approach to accuracy to be useful as a guide to appropriate (economic, i.e. balancing) wage changes.

9. The average of wholesale prices moves generally sidewise, weaving over and under a horizontal axis; the statistical conception called "cost of living" moves over and under a slowly rising axis.

10. Changes in wage structures on account of changes in the cost of living may be more important to the maintenance of equilibrium over a short period than changes in productivity, but fundamentally such changes should be viewed as short-term adjustments.

11. Wage-change leaders, just as much as price-change leaders, are needed in a competitive, price economy.

12. Available statistics of such fundamental concepts as national income, productivity, and cost of living only approximate the facts, and those who use them for adjustments should be guided accordingly.

### Trends in Costs of Replacing Petroleum Reserves

By JAMES V. BROWN, Petroleum Analyst, Independent Petroleum Association of America:

Increasing costs, under frozen price ceilings, have become a matter of serious concern to the industry.

Several studies of replacement costs have been made in recent years, and all have indicated a sharp upward trend. These reports show total cost of finding, acquiring and producing crude oil in the United States to have advanced from $1.17 per barrel of production in 1917 to $1.52 per barrel in 1941. The most recent cost study, by a subcommittee of the National Crude Oil Industry Advisory Committee, indicates exploratory costs in 1944 were four times higher than in 1936-1939, that development costs were double and operating costs were up 10 percent in the same period.

Important changes in conditions have occurred in recent months and further changes are in prospect for 1946, primarily due to termination of the war. A substantial curtailment of crude oil output has already occurred and further reduction is in prospect. The decrease in income caused by curtailed output cannot possibly be offset by a proportionate reduction in crude oil cost and expenses, and this further impairs the ability of the industry to carry on necessary exploratory and development operations. This decrease in production also will cause unavoidable increase in cost per barrel and reduction of profit.

Average cost of drilling and equipping oil wells per foot in 1944 was at least 50 percent higher than for the period 1936-1939. Further increases have been announced on the basic cost of steel. This will add approximately 10 percent to present cost of steel products used by oil producers.

There has been a recent, almost general, substantial increase in the cost of labor. In 1941 salaries and wages in crude petroleum production, on a national basis, averaged 26 cents per barrel of net production. Considering the volume of expected production in 1946, I believe labor costs will approximate 43 cents per barrel in 1946, an increase of 17 cents per barrel over prewar costs.

The recent wage and price order means industry-wide petitions for price increases in order to survive rising costs of steel, other materials and wage demands. The crude petroleum producing industry has gone through two of these OPA industry-wide cost surveys in four years. Only an optimist will assume that the present wage-price policy will bring needed price relief to offset higher costs. My suggestion is to permit industry to return to the managing of its own affairs. Full production is the most effective weapon in holding down prices. Price control retards production and creates scarcity. It is inflationary and encourages monopoly.

### Crude Oil Reserves and Prices

By CHARLES J. DEEGAN, associate Editor, The Oil and Gas Journal, Tulsa, Oklahoma.

The public and some government and military authorities misunderstand the oil-industry term, "years' supply" as a measure of crude reserves. Actually, this is a short cut term to express the ratio between proved reserves and the current rate of production, and this ratio traditionally has remained fairly constant over the years. Formerly, this proved reserve or "inventory" fluctuated between 10 and 18 years' supply. But in more recent years, following advent of modern conservation practices and scientific control of production, there has been a tendency for reserves to represent between 12 and 14 years' supply.

"Years' supply" is simply the petroleum industry's trade term for its raw material inventory although outside the industry the term is interpreted literally, which results in unjustified concern over "running out of oil" in 15 years or so. Coinage of a new trade term therefore might be desirable, such as "raw material inventory ratio."

Unusual about this inventory is its size in proportion to the volume of business done. Some industries probably operate with as little as 3 months' supply of raw materials. The petroleum industry has its own peculiar conditions. Regardless of how it might look to a business man from another industry, the facts show that the natural and normal raw material inventory of the petroleum industry is about 12 to 14 years' supply.

As in any other business, the petroleum inventory fluctuates with prices. When demand is high in proportion to

supply, inventory comes down and prices goes up. And the converse is true.

Nor has proration of production, under modern conservation practices, prevented the inventory or reserve from responding to fluctuations in price. In the past 10 years fluctuations in inventory within the range of 12 to 14 years' supply were normally accompanied by corrective price changes that keep the inventory within those limits.

Prior to development of modern proration and conservation, fluctuations in above-ground stocks greatly influenced pricing. But subsequently, above-ground storage has assumed merely a working-stock function, and the major function of serving as a price barometer has now shifted back where it always had its real foundation, directly to the proved underground reserve.

Actually, the underground reserves had always served as the basic raw material inventory, but lack of control over rates of withdrawal from this inventory had obscured its true relationship to price.

Charts showed the relationship of oil prices to the prices of other commodities. They showed that the long term trend is for oil prices to stay much more closely in line with other prices than they are now. Therefore, either other commodity prices will have to come down eventually, or oil prices will go up, or possibly a little of both will occur.

### Economic Patterns of Oil Pipe Lines

By G. L. SHANKS, The Pure Oil Company, Chicago.

Interstate Commerce Commission data for the last 16 years show a tremendous drop in operating revenue per barrel-mile. The sharpest decline began in 1936 and still continues. In December, 1940, the ICC ordered 17 pipe lines to show cause why their tariff rates should not be lowered to produce 65 percent of revenue derived as of December 31, 1935.

The chief cause of the drop in operating unit revenue per barrel-mile was the increase in trunk barrel-miles; in 1944 barrel-miles were 243 percent of those in 1929, yet operating revenue dollars increased only 12 percent, causing operating revenue per barrel-mile in 1944 to drop to 51 percent of the unit for 1929.

The declining differential between unit revenue and unit of total expense can be arrested only by increased tariff rates or by decreased total unit expense. Appreciable change in tariff rates is unlikely; hence, lowering total unit expense offers the only hope. Better pipe and equipment, more efficient pumping practices, improvement in batching technique, higher operating pressures, more and better inhibitors, and reduction in corrosion loss are the means being studied.

The consent decree of December 23, 1941, in the District Court, Washington, enjoined a number of pipe lines from paying to shipper-owners, as earnings or dividends, in any year after 1941, more than 7 percent of the ICC valuation. Excess earnings over 7 percent if reinvested are excluded from the valuation base in subsequent calculations. This forces a decline in the value base, and can have disastrous effects on pipe line finances and economics if carried through to the ultimate exhaustion of value.

In 1929, taxes were 11 percent of the cost dollar of the lines; in 1944 29.30 percent. This is the chief factor in keeping up total costs. Depreciation in the cost dollar has declined from 32.17 cents in 1929 to 17.32 cents in 1944. Employes in 1944 remained about the same as 1929, but remuneration is up from $46,251,004 to $73,563,475.

### Related Trends in Future Domestic and Foreign Petroleum Operations

By HOWARD W. PAGE, Economics Department Standard Oil Company (New Jersey)

Study of the near-term situation reveals significant forces at work and makes possible some perception of trends in the next 10 to 20 years.

Foreign crude oil production and refinery operations have increased since V-J day as foreign capacity has increased with continuation of drilling programs and completion of more refineries and transportation facilities and the new capacity has been fully utilized.

Domestic activities in the Untied States during the same period have shown a decrease averaging about 10 percent from the peak reached in July, 1945. Foreign operations will remain at maximum capacity or increase with some new rehabilitations while domestic operations on the average may decline another 5 percent from the peak.

Over the next 10 years, the United States likely will continue as exporter of gasoline, kerosine, distillates, and lubes and as importer of residual fuel and crude, particularly special and heavy crudes. Eastern Hemisphere demands are projected to increase about 675,000 barrels daily (excluding Russia), and Western Hemisphere demands outside the United States about 160,000 daily. Consequently, foreign crude oil production and refining operations are expected to continue at maximum capacity.

It is doubtful if U. S. exports will be reduced as low as a minimum of about 100,000 barrels daily of specialty products within the next 10 years.

Prospects of petroleum requirements over the next 10 years: total 1956 exports, 240,000 barrels daily against 479,000 in 1946; total domestic demand for crude and products 5,310,000 barrels daily in 1956, compared with 4,372,000 in 1946 (assuming increase of 2 percent per year of the 1946 volume); total demand for crude and products 5,550,000 daily in 1956 against 4,851,000 in 1946 (exclusive of estimated 61,000 barrels daily addition to stocks in 1946 which would bring the grand total of demand for crude and products in 1946 to 4,912,000 barrels daily).

Estimated sources: domestic crude production 4,200,000 barrels daily in 1956 against 4,221,000 in 1946; domestic production natural gasoline and condensates, 400,000 daily in 1956 against 310,000 in 1946; gas synthesis into gasoline 200,000 daily in 1956 against none in 1946; crude imports 300,000 daily against 240,000; residual imports 450,000 daily against 130,000; miscellaneous imports none, against 11,000.

During the next 10 years crude production will increase, eventually reaching maximum efficient rates of production, and then decline as those rates decline. Increase in crude production depends primarily on exports and new refinery installations abroad.

Increasing domestic requirements between 10 and 20 years from now likely will be met by producing crude oil, natural gasoline, and condensate at maximum efficient rates, further expanding hydrocarbon synthesis, further increasing yields of light products and reducing yield of residual fuel, with increased residual imports to balance, and increasing crude oil imports. The domestic producer shortly will have market for all the crude he can find and produce, and higher yields of the more valuable prodcuts at refineries will offset rising costs, with the installation of much improved refining equipment in prospect soon.

In the period 10 to 20 years ahead, requirements in the Eastern Hemisphere are expected to increase rapidly. Refinery and pipe line construction will be upon large scale, and crude production will be increased, mainly in the Near East and some in the East Indies. There will be ample reserves for 20 years. In the Western Hemisphere vigorous searching for oil will be necessary, and some refinery expansion may be expected, but not as much as in the Eastern Hemisphere, especially because much of the increase in demand will be for residual fuel.

# Abstracts of AIME Technology Papers

At the sessions of the petroleum division devoted to technology, seven papers were presented, including four on various phases of reservoir studies and three on specific operating problems. One of these papers had been presented last fall at an AIME meeting in Los Angeles, and it will be published in the March issue of *Petroleum Technology*. This paper, "The Viscosity of Water, Gas and Gas-Saturated Crude Oil Under Reservoir Conditions," was by Carlton Beal, consulting petroleum engineer. Beal's paper was read for him in Chicago by Harold J. Clark, of the Conservation Committee of California Oil Producers, Los Angeles. Abstracts of others presented at the technology sessions follow:

### Interpretation of Well Test Data in Gas-Condensate Fields

By JAMES O. LEWIS, consulting petroleum geologist and engineer, Houston.

The uncertainty of available data on gas-condensate fields, and the present methods used in analyzing, interpreting and correlating laboratory and field data were discussed. New methods were advanced for interpreting well GPM tests whereby dilution by dry gas can be estimated and information supplied on revaporization of condensates by dry gas.

Changes in flow rates can cause changes in GPM of the effluent and it takes sometime for a well to become stabilized after an important change in flow rate. Retrograde tests as usually conducted cannot be compared directly with field GPM data because the tests usually include solution gas in the condensates which are reported on the cumulative basis, whereas field data usually reports pentanes plus on a rate or instantaneous basis. There also is uncertainty whether retrograde behavior in the reservoir follows flash or differential separation or something between the two and whether comparison should

■ CONTINUED ON PAGE 41

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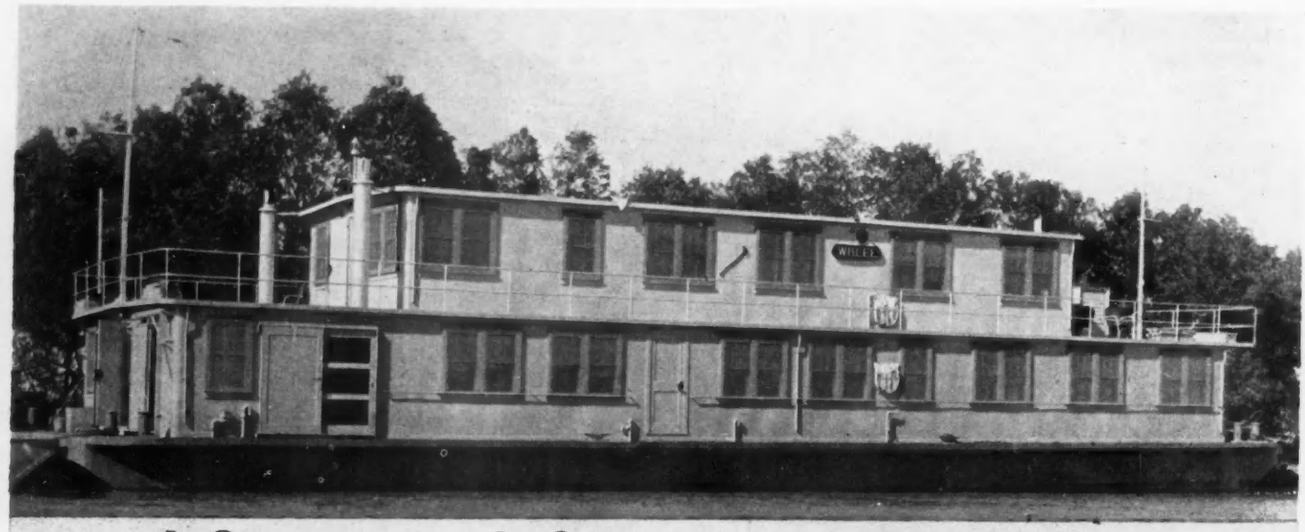


# A Seismograph Crew on the Mississippi

## GULF COMPLETES ALL-STEEL QUARTER BOAT

**The all-steel houseboat *W. B. Lee* at anchor near the mouth of the Mississippi River. The boat will house 40 persons.**

A HOUSEBOAT designed to provide unusual comforts for geophysical crews who must work in isolated coastal areas was recently constructed and put into operation by Gulf Research and Development Company. Since it is impossible for the men to return to their homes at the end of the day's work, Gulf employs a program calling for ten days in the field and four days off out of every two weeks. The boat described in this article is anchored at the mouth of the Mississippi River about 75 miles below New Orleans and is supervised by W. B. Wiley, party manager.

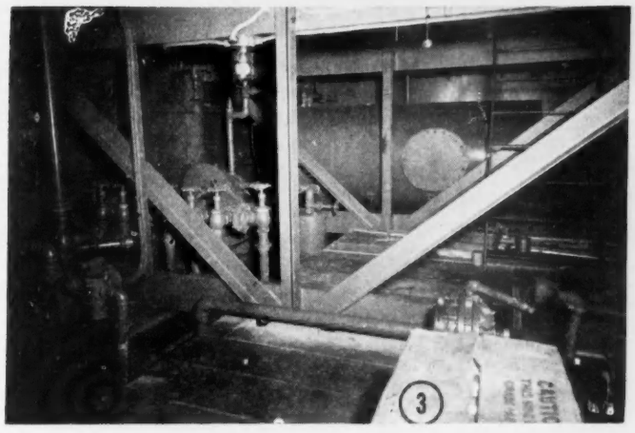
Constructed of steel with a flat main deck, the hull has rounded rake ends with a towing skeg on the after end. The vessel has a main deck house also of steel with a center passageway from forward to after end. Sliding doors open to eight bunk rooms, each containing four bunks, a wash room, a toilet, recreation room, large mess hall, large galley with 75 cubic foot refrigerator, ice-making room with built-in shelves for store room, and a boiler and machinery room. The fresh water tanks and fuel oil tank are in the lower after compartment of the hull.

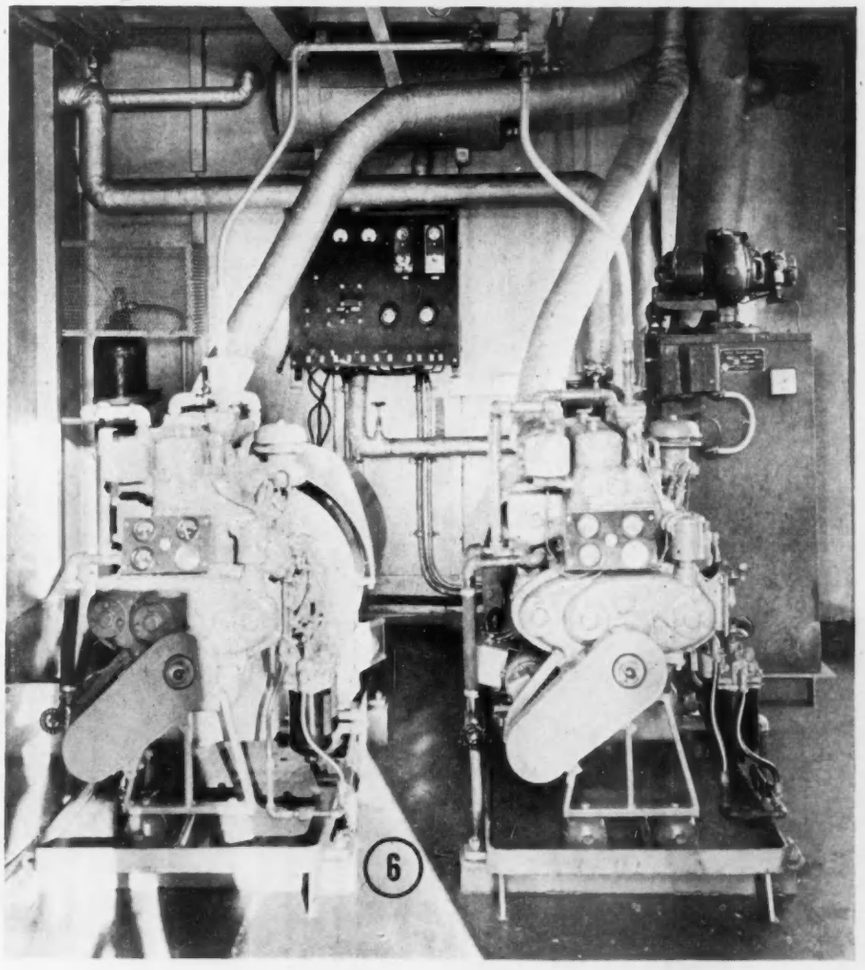
The upper deck house consists of a main office with a center passageway aft, one private office on either side of the pasage-way, and two staterooms with adjoining bathroom on either side of the passage-way. An outside stairway runs from the main deck to the upper deck forward, and an inner stairway runs from the recreation room on the main deck to the upper deck center line passage-way. Staterooms on the upper deck are reserved for visiting officials of the company. Other staterooms are occupied by the party manager, assistant party manager, interpreter and surveyor.

On an operation of this kind, there are many things to consider beside the gathering and interpreting of seismograph data. Groceries must be supplied and cooked. The houseboat is across the Mississippi River from the highway, and all provisions must be carried in by boat. Also boats take the place of trucks to move seismograph equipment over the water. There are 12 powered boats to take care of these needs. Experienced river hands must be recruited to operate the boats. An assistant party manager who speaks French fluently is necessary to handle the myriad details of keeping the party in operation. There are six other boats, which do not furnish their own motive power. Four of these are flat deck barges used to transport fuel and equipment. On longer hauls the marsh buggies are driven on these barges so they can be overhauled en route. Another barge is equipped with a winch and A-frame boom for use in hoisting other boats for repairs and for pulling shot hole casing in water locations. The other barge contains the workshop and dark room for making prints of seismograph records.

**The interpretation office (above left) is large and airy.**

**Also in the interpretation office is the marine telephone (above right) by which connection can be made with the nearest marine operator, who will place the call at any telephone in the country. In right of picture is the field communications transmitter by which constant contact is maintained with the field party.**

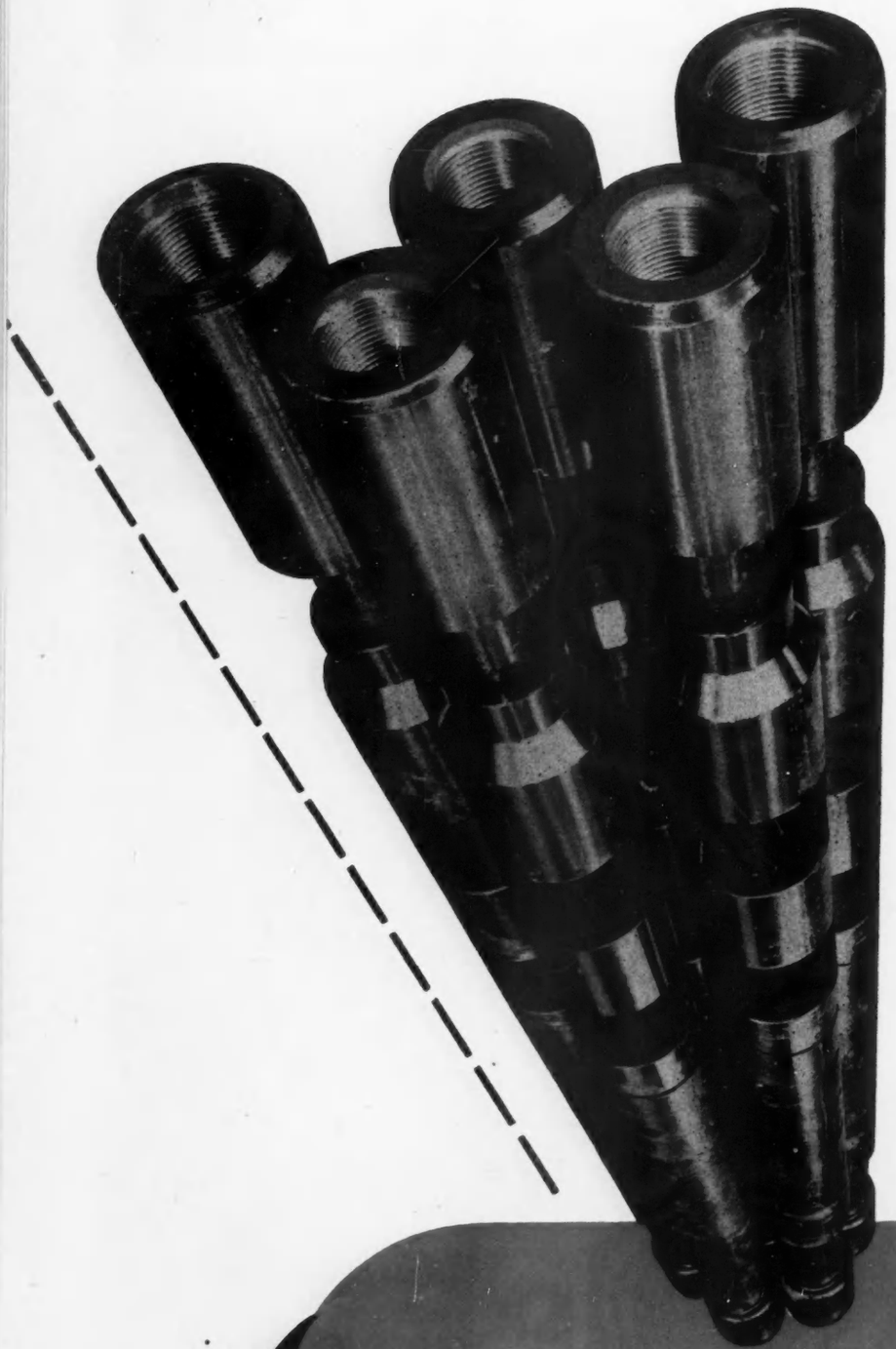




1. The party manager's office is equipped with all the latest gadgets, including an intra-boat telephone.
2. Each room accommodates four men, is made comfortable in summer by forced draft and in winter by a radiator operated from central heating system.
3. Fresh water pump and pressure tank. Fresh water is barged in and stored in six 650-gallon tanks. To the right of the fresh water pump is the bilge pump, also used in case of fire.
4. The galley is designed for maximum efficiency, has a 75-cubic-foot refrigerator.
5. A drinking fountain is one of many small conveniences provided for the men's comfort.
6. The machinery room contains two 10-kilowatt diesel-engine driven alternating current generator sets equipped for manually controlled parallel operation. In the right background is the diesel-fired heater which supplies hot water.

# PACKERS *from*

## PRESSURE-CONTROL HEADQUARTERS



Cameron's quarter-century of experience in pressure control is clearly reflected in the Type "K" Circulating Anchor Packer. Hundreds of successful settings under practically all known sub-surface conditions and involving both multi-zone and single zone completions, provides a preponderance of evidence of the sound, simplified, design of this tool.

The Type "K" Packer is spaced in the oil string at the desired point by megns of spacer-pipe, which may include either liner and screen or perforated pipe for production tests. If a liner is set, the packer may be set on top of it, thus obviating the need for spacer pipe. After setting the packer, which is accomplished by lowering the tubing until the valve packer contacts the valve seat, the seal may be tested by introducing pump pressure into the tubing or oil string. The packer is so designed that the higher the pressure, the tighter the seal. A *fully enclosed* resilient sealing element in the valve assures a pressure-tight seal at that point, although the valve seat may have been substantially cut during washing operations.

The absence of "J" tools, slips and other complicated mechanism contributes to the ease of setting or retrieving the Type "K" Packer. Furthermore, it is of the full-opening type, freely passing any bottom hole equipment that will pass thru the tubing, and is designed to permit rotation to tools below should the need arise.

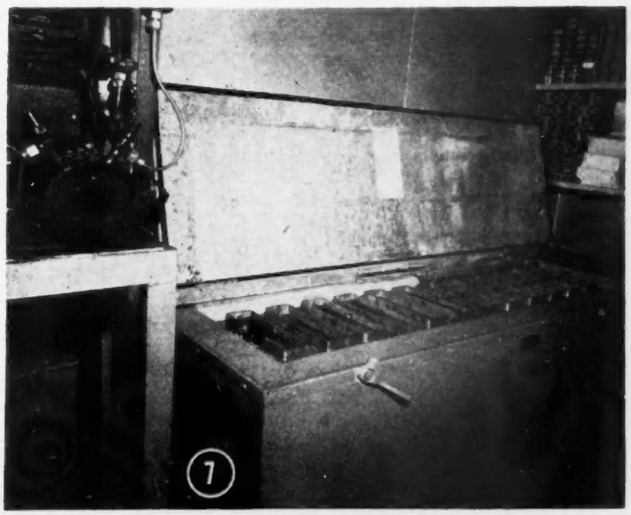
Cameron Type "J" Cross-Over Packers for use with Type "K" Packers when it is desired to produce a lower sand thru the oil string and an upper sand thru the tubing, are also available.

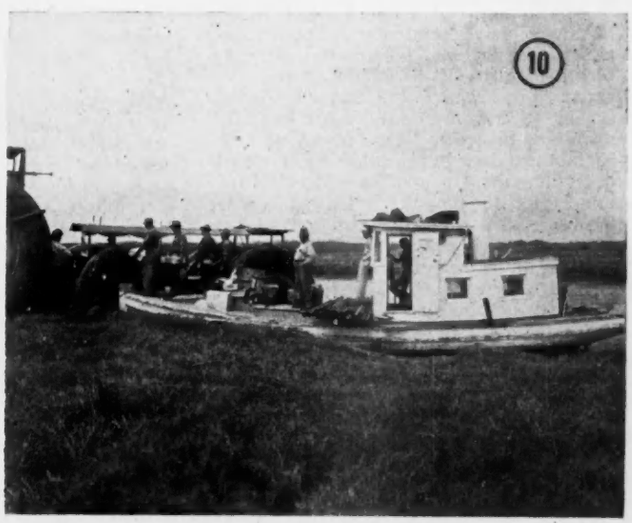
Interested operators are invited to write for complete details.

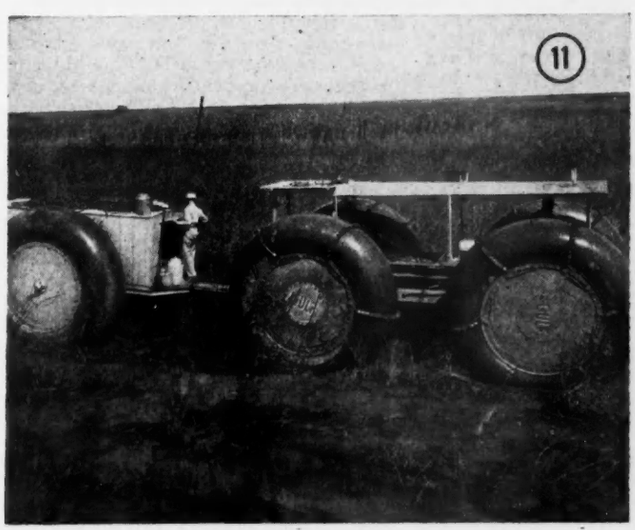
# CAMERON IRON WORKS, INC.

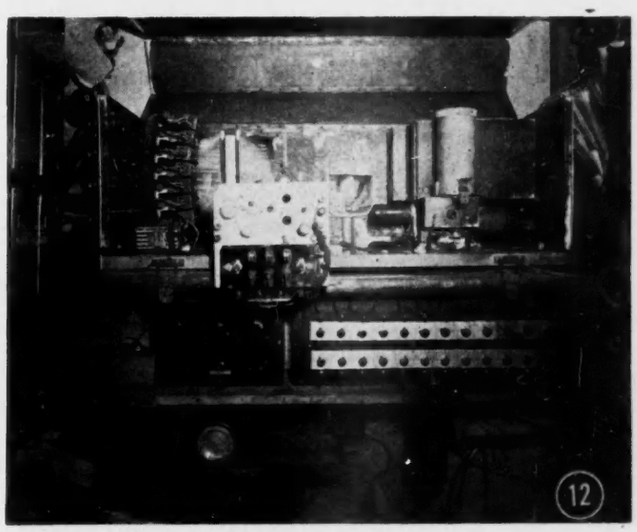
**HOUSTON, TEXAS**

*Export:* 74 Trinity Place, New York City. *California:* Howard Supply Company, Los Angeles. *Oklahoma:* 310 Thompson Building, Tulsa









7. The ice-making machine has a capacity of a dozen 25-pound blocks daily.
8. Dining room scene as the men breakfast before going into the field. Practically all of the crew can be accommodated at a sitting. The recreation room is in the background.
9. The crew is transferred to the job by means of lugger and speed boats. One of the boats is equipped with two motors for speedy transit.
10. A marsh buggy is loaded with dynamite to be taken to the shot point. Another marsh buggy will take the operating crew to the instrument trailer which is mounted on marsh buggy wheels.
11. A marsh buggy is connected to the instrument trailer and is ready to proceed to the proper point to receive the reflections from the shot.
12. Interior of the instrument trailer showing the panels.

# *Oil and Gas Reserve* Estimation Charts

By D. G. BARNETT

THESE alignment charts are designed for rapid, preliminary petroleum reserve estimations.

The graphic operation is simple. It reveals both the size of the reserve and that of intermediate values such as gross reservoir volume, net reservoir volume and recovery per acre-foot. The result is a complete quantitative representation of a given reserve in a convenient form for reference and filing.

Position of the decimal point, which has an elusive tendency in pencil and paper calculations, is automatically determined for all problems within the capacity of a chart. This capacity is sufficient to accommodate most practical problems directly. Those involving larger factors may be handled by a simple decimal shift. If necessary to multiply one factor by ten, the indicated reserve figure is also multiplied by ten. If two factors need be multiplied by ten the reserve figure is multiplied by 100.

With reasonable care in plotting, results can be obtained consistently within a 5 percent range of accuracy.

In addition to the primary purpose of estimating reserves, a chart provides means for the solution of secondary problems; for example, determination of the size of factors necessary to provide a reserve of a given quantity, or the conditions of saturation and recovery percent essential to a given recovery per acre-foot.

The scales are so arranged that the procedure is orderly and logical. By first clearly and accurately marking the factors of a given problem upon the appropriate scales confusion may be avoided. Use of colored lead pencil or ink is recommended.

Directions for use of the Gas Reserve Estimation Chart:

### General Procedure

There are four primary factors in a given gas reserve estimation problem; productive area, average thickness of reservoir sand, effective porosity which is the gross porosity minus the allowance for connate water, and the pressure under which the gas exists commonly taken as the well-head shut-in pressure.

The preliminary step consists in clearly indicating the values of these factors for a given problem upon Scales 1, 2, 4 and 6.

Obtain an intercept on scale 3 in alignment with factors indicated on Scales 1 and 2. Strike a second intercept on Scale 5 in alignment with intercept on Scale 3 and factor on Scale 4. Final intercept on Scale 7, indicating size of the reserve, is taken in alignment with intercept on Scale 5 and factor on Scale 6.

Scale 6 has a double graduation; for pressure in pounds per square inch at 15 pounds per square inch per atmosphere, on the left; on the right in atmospheres for use when the operator prefers the use of a different pressure base.

The fundamental operation outlined above obtains estimations in line with the General Law of Gases. The deviation of natural gases from this law renders such estimations somewhat less than the actual reserve quantity under conditions of reservoir pressure less than approximately 4500 pounds per square inch. Maximum deviation effects under normal conditions occur under states of reservoir pressure approximating 2000 psi. For relatively dry gasses, with gravities of .60 to .70 (air equals 1), the reserve estimates obtained by chart might be inadequate by approximately 20 percent under these conditions of maximum deviation. Errors in determining the basic factors, effective porosity for example, might easily be as great. For the heavier, wet gases the deviation effects are progressively more pronounced and in dealing with them special calculations are recommended.

Adjustments for deviation in the use of the chart are possible, for example, by employing a graduated pressure base. However it seems preferable to use the chart for quick preliminary estimates, keeping in mind the fact that the estimations tend to be on the conservative side and reserving the adjustments in line with deviation effects for more formal and detailed calculations.

To illustrate the method consider the following example of an imaginary gas field with specific conditions as listed. Plotting of this problem is shown upon the Gas Reserve Estimation Chart. The reserve, calculated arithmetically without allowance for effects of deviation, is approximately 31.4 billion cubic feet.

**Rio Viejo Gas Field, Hidden Bay District**

| | |
|---|---|
| Productive area | 3000 acres |
| Average sand thickness | 16 feet |
| Effective porosity | 25 % |
| Shut-in pressure | 1200 psi |
| Estimated abandonment pressure | 300 psi |
| Effective reservoir pressure | 900 psi |

Directions for use of the Oil Reserve Estimation Chart (page 24).

### General Procedure

The chart is flexibly adaptable to a wide variety of conditions pertaining to the information available concerning a given reserve. If only a more or less intelligent guess can be made regarding probable recovery per acre-foot, an answer may be obtained to correspond. If detailed laboratory analyses are available, advantage may be taken of such information and the accuracy of the estimation accordingly improved.

The chart is divided into two groups of scales; the three A scales constituting one and the three B scales with their two sub-charts the other. All operations are directed toward obtaining values on scales 3-A (gross reservoir volume) and 3-B (recovery per acre-foot) since these two factors determine the reserve which can be found by intercept on scale X from them. The value on scale 3-A is readily obtained by intercept in alignment with values appropriate to the given reserve problem and designated on scales 1-A and 2-A.

### Factor of Recovery per Acre-Foot

The recovery per acre-foot factor may be estimated directly by judgment based on experience or obtained as the end product of detailed core analysis.

If the saturated porosity percent by volume can be estimated directly or from core analysis, and the recovery factor estimated, for example on the basis of reservoir type and conditions, the first may be entered directly on Scale 1-B, the second on Scale 2-B and the value on scale 3-B obtained by intercept. Sub-chart 2 is for calculation of saturated porosity from known or estimated values of porosity and saturation.

Sub-chart 1 is employed when the factors indicated are avaiable from core analysis or can be satisfactorily estimated. Indicate accurately the values on scales A, B and C. Strike an intercept on Reference Line in alignment with factors on scales A and B. Project a line from factor on Scale C through the intercept on the Reference Line to, and intercepting Scale D. This indicates the recovery percent value which is to be entered on Scale 2-B. Then using the full value of porosity percent on Scale 1-B, value on Scale 3-B is obtained by intercept and the reserve value on Scale X can then be obtained as described in paragraph 2 under topic of general procedure. This method takes connate water directly into account and with the use of the shrinkage factor, expresses the estimated reserve in terms of pipe line oil barrels.

As an illustration consider the example of the conditions presented in the following imaginary oil reservoir.

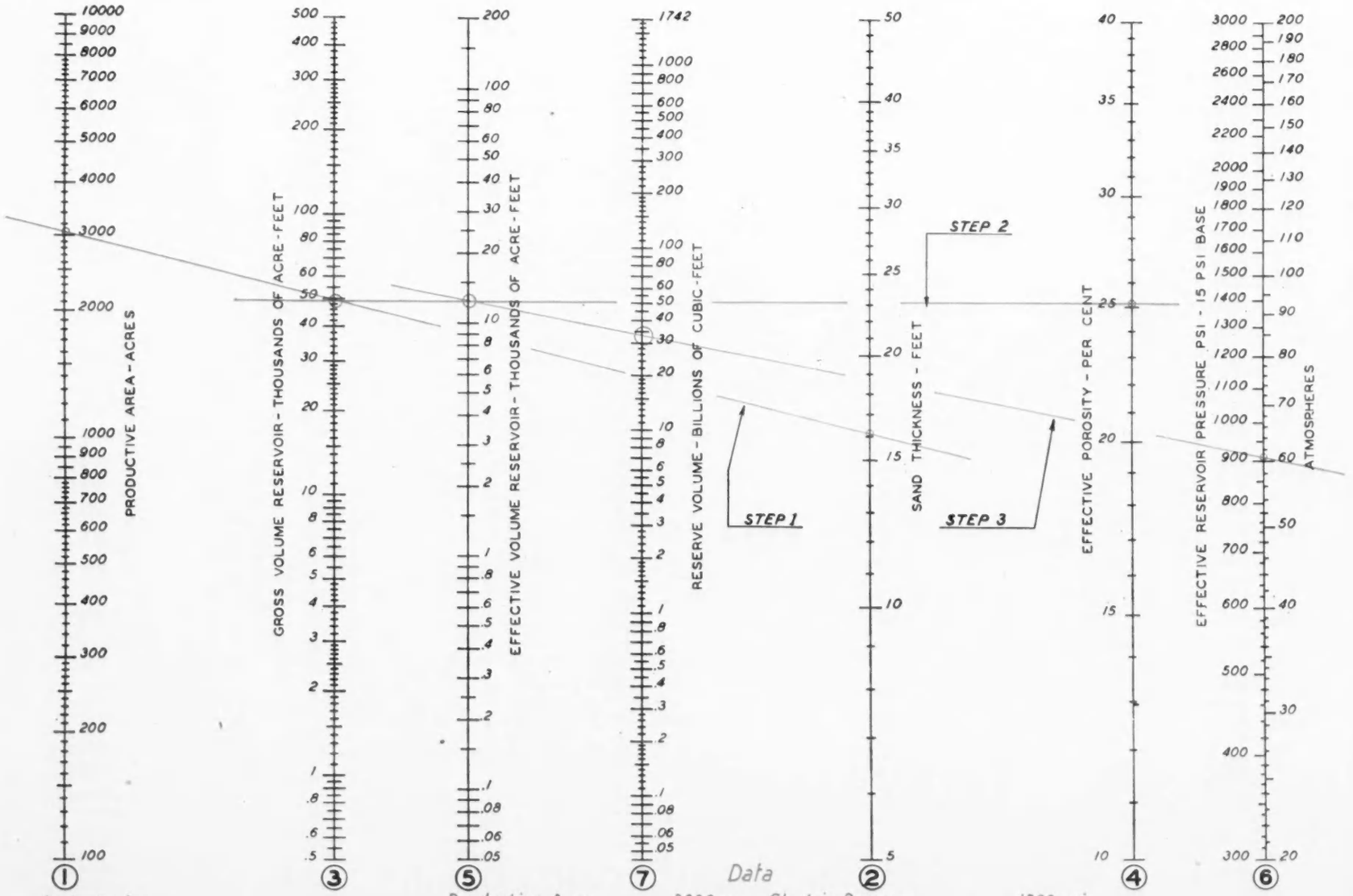
**Roughcut Oil Field, Bald Hill Area**

| | |
|---|---|
| Productive area | 6000 acres |
| Average sand thickness | 10 feet |
| Gross porosity | 21 % |
| Connate water | 30% of pore space |
| Shrinkage factor | 10 % |
| Unrecoverable oil | 60 % |

Arithmetical calculation for conditions listed in the above problem indicates a reserve approximating 24.6 million barrels. Plotting of the graphic solution is illustrated upon the Oil Reserve Estimation Chart.

*Rio Viejo Gas Field*
*Hidden Bay District*

# GAS RESERVE ESTIMATION CHART




*Basic Factors*
*Derived Factors*
*Reserve Estimate*

*Data*

| | | | |
|---|---|---|---|
| *Productive Area* | *3000 ac.* | *Shut-in Pressure* | *1200 psi.* |
| *Av. Sand Thickness* | *16 Ft.* | *Est. Abandonment Pressure* | *300 psi.* |
| *Effective Porosity* | *25 %.* | *Effective Reservoir Pressure* | *900 psi.* |

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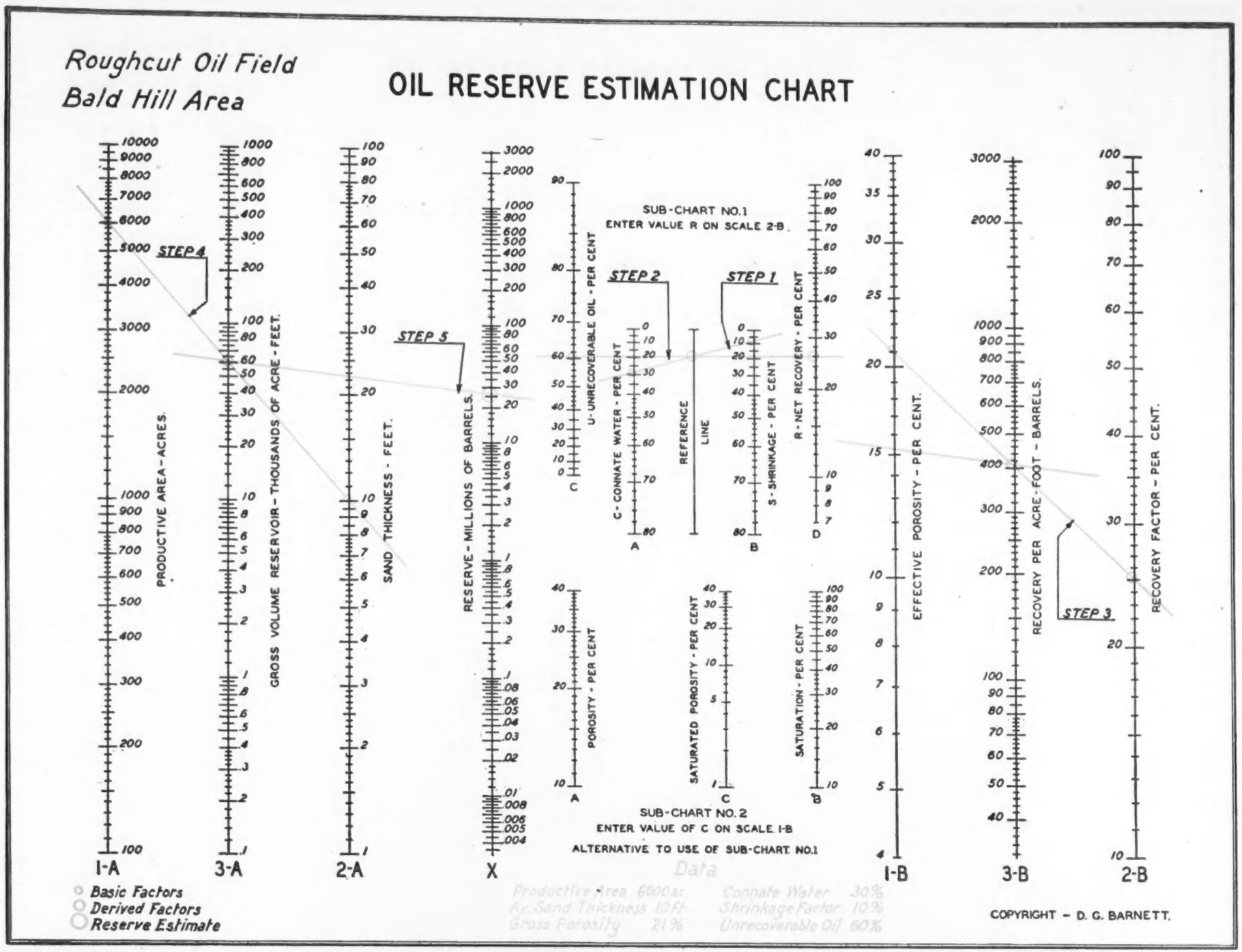
Roughcut Oil Field
Bald Hill Area
OIL RESERVE ESTIMATION CHART
STEP 4
STEP 5
STEP 2
STEP 1
STEP 3
PRODUCTIVE AREA - ACRES.
GROSS VOLUME RESERVOIR - THOUSANDS OF ACRE - FEET.
SAND THICKNESS - FEET.
RESERVE - MILLIONS OF BARRELS.
U - UNRECOVERABLE OIL - PER CENT
C - CONNATE WATER - PER CENT
REFERENCE LINE
S - SHRINKAGE - PER CENT
R - NET RECOVERY - PER CENT
POROSITY - PER CENT
SATURATED POROSITY - PER CENT
SATURATION - PER CENT
EFFECTIVE POROSITY - PER CENT.
RECOVERY PER ACRE - FOOT - BARRELS.
RECOVERY FACTOR - PER CENT.
SUB-CHART NO. 1
ENTER VALUE R ON SCALE 2-B
SUB-CHART NO. 2
ENTER VALUE OF C ON SCALE 1-B
ALTERNATIVE TO USE OF SUB-CHART NO. 1
1-A
3-A
2-A
X
1-B
3-B
2-B
Basic Factors
Derived Factors
Reserve Estimate
Data
Productive Area 6000 ac.
Av. Sand Thickness 10 Ft.
Gross Porosity 21%
Connate Water 30%
Shrinkage Factor 10%
Unrecoverable Oil 60%
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# as drilling goes farther down the hole...

## EVEN MUD ISN'T DIRT CHEAP

The 25 to 35 thousand wells which the oil industry intends to drill each year are averaging far greater depths than prewar wells. And depth greatly increases cost. As the lush days of drilling wane, each well has to be squeezed to the last drop.

So Dresser Industries, being in fact a part of the oil industry, goes after the cost of oil, too, even to such detail as the cost of mud. Mud strikes most people as an utterly cost-free material. But mud is pumped into wells to cool the drilling bit and carry the rock chips up to the surface. By the time mud has been pumped a mile down and a mile back again, it takes on cost. Three member companies of Dresser Industries recently put their heads together and, by the teamwork that is the spirit of Dresser Industries, brought out a new Triplex mud pump that is far better than any earlier pump and helps cut the cost of oilwell drilling.

All along the line—from better drawworks for drilling, or pumps, either mechanical or hydraulic whichever the job calls for, right on into refinery equipment—Dresser Industries, Inc., is constantly engineering to reduce costs in the oil industry. If it's made by one of the Dresser Industries, it's—*First to be new—Last to wear out.*

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BRYANT Heater Company, Cleveland, Ohio

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PACIFIC Pumps, Inc., Huntington Park, Calif.

INTERNATIONAL Derrick & Equipment Co., Columbus, Marietta & Delaware, Ohio; Beaumont, Texas; Torrance, Calif.

PAYNE Furnace Co., Beverly Hills, Calif.

ROOTS-CONNERSVILLE Blower Corporation, Connersville, Ind.

CLARK Bros. Co., Inc., Olean, New York

STACEY BROS. Gas Construction Company Cincinnati, Ohio

DRESSER Manufacturing Company, Limited Toronto, Ont., Canada

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VAN DER HORST Corporation of America, Olean, N. Y. and Cleveland, Ohio

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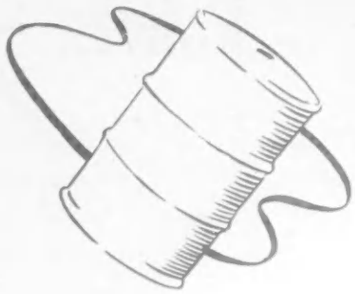

# General Value of Input and Records in Secondary

IN THE production of petroleum by water flooding or gas injection the petroleum engineer, on a properly managed project, is inevitably confronted by the questions of just how much water or gas must be introduced, what pressure will be required for the injection, whether injection rates and pressures should remain constant during the life of a project, and the other items combining to form the major question of volume and pressure control.

In both water flooding and repressuring competent engineers are reaching the conclusion that volume and pressure control *at the input well* are far more successful than any corrective conditions applied at producers. This, of course, is quite logical in that control of the artificially created pressure gradient between input and producer, which is the oil moving factor, is more easily and effectively accomplished by control at the point of introduction into the reservoir.

Although unhesitatingly granted that core analyses furnish vital data for control in a homogeneous reservoir, the exceedingly complex nature of the solid, liquid and gaseous phases of most pools make the homogeneity of the complete reservoir unmeasurable by core analyses alone. The inexperienced producer may erroneously label a pool as homogeneous and expect injected media movement to agree closely with imperical radial flow formulas, without reckoning with the vital factors of sand composition, bonding material composition and nature, fluid and gaseous phase composition and nature, including interstitial water composition, whether sand is water or oil wet and interphase relationships. Accordingly, proper analytical procedures identify core analyses, geologic and producing data as indicating but not defining physical reservoir properties.

At present one of the most favorable revealing methods of formulating injection volumes and pressures is by use of injection characteristics, or pressure versus volume relationships.

In air or gas repressuring, injection characteristics have not had quite the experimental attention as in water flooding; however, they serve as very useful instruments for gas input control.

Although probably not true in most pressure maintenance projects, where installations are fairly recent and an abundance of controlling data available, most repressuring projects of today exist in pools drilled many years ago. In all probability spacing is very irregular, and some wells plugged. Geological data are very meager or non-existant, production data not reliable for individual wells, well completion and clean-out data not recorded, and other data necessary for proper analysis missing.

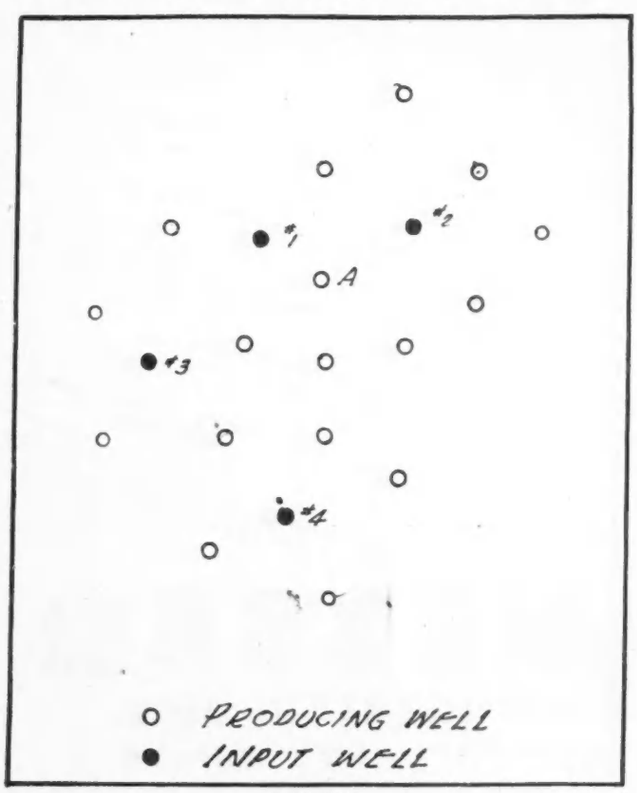


FIGURE 1

The usual procedure for inauguration of projects in such a pool, if the operator has sufficient acreage to justify the expenditure, is to drill one or more input wells in central locations and get as much data as possible. Gas or air is then introduced in these newly drilled locations and procedures indicated by results obtained from them adopted in the remainder of the producers converted to inputs, although such a development undoubtedly may cause inefficient operations in many instances. Complete redevelopment for repressuring purposes alone is an economic impossibility.

Input wells are usually selected for their relative locations to producers or pool structure and gas injection begun. From this point on the success of the project depends in no small degree to the accuracy with which gas movement is controlled. So long as the gas or air effectively moves oil through the formation toward producers, control is not needed. However, as mentioned previously, most reservoirs are very irregular in nature and injected gas does not always follow radial movement equations. In many instances on record, injected gas has appeared in producers two, three or four locations away. Obviously, it is therefore necessary to have an accurate record of indicated gas movement, rates and directions.

Although impossible to know this exactly, a complete, accurate and continuous study of input and produced volumes and pressures affords sufficient data usually for control purposes. An example of the application of such follows:

Assume a pool such as that illustrated in Figure 1. Input wells No. 1 and 2 are newly drilled locations from which relative sand, fluid and gas conditions are estimated and an injection program adopted. Input wells 3 and 4 are converted producers which have input rates decided upon by study of 1 and 2. Assume also the project to be that of a small producer who will not have bottom hole pressure and other controlling data available.

Prior to the start of actual gas injection, accurate gas-oil ratio tests should be taken on each producer. These tests should be repeated probably every 30 days until each well's producing characteristics are definitely known and thereafter probably every 90 days or 6 months will suffice. These tests should be very accurate and not made by the pitot tube or other snap-testing methods. Accurate and complete records of both oil and gas production obtained by those tests should be recorded and graphed.

Shortly after the start of actual gas injection, each input well should have an input or injection characteristic test run on it. In order that the tests be accurate and also have a record of same for future reference, it is advisable that an orifice meter be used to record gas volumes. Procedures to be followed in making the tests are very simple in that they are merely the measurement of volumes accepted by the wells at various input pressures.

### Making The Test

To make such a test in an input well, an orifice meter is properly connected

# Producing Recovery

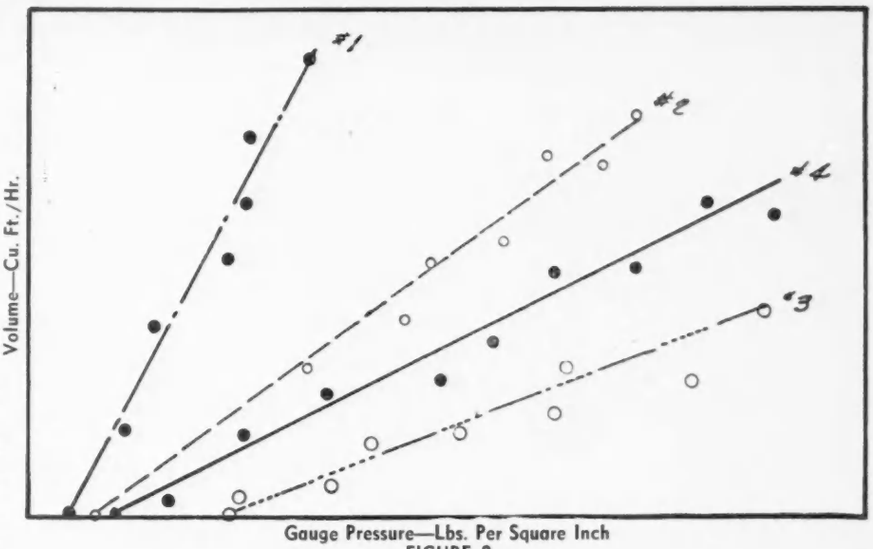

FIGURE 2

to the input gas line and gas injection begun at a very low or entry pressure. Gas is injected into the well at this constant selected pressure until the well is accepting gas at a fairly uniform rate. Input pressure is then increased and held constant at its new value until another uniform volume input rate is obtained. Following this the pressure is again increased a certain amount and a new pressure-volume relationship is obtained as before. The procedure is repeated at various pressure intervals ranging from the lowest pressure at which the well will accept gas (entry pressure) up to the highest pressure which will be used for putting gas into the well. From these pressure-volume relationships is plotted the input or injection characteristic curve for the well.

To plot these curves have one coordinate represent gauge pressure in pounds per square inch at the well head and the other coordinate represent volume in cubic feet per hour. The volume coordinate values are of course the dependant variables and should all be converted back to a common pressure and temperature base. Typical input characteristic curves are illustrated in Figure 2.

Inasmuch as the application and uses of such a curve is being correlated with a hypothetical project (illustrated in Figure 1), Figure 2 shows theoretical input characteristic curve for input wells 1, 2, 3 and 4. As these tests are repeated at later dates during the life of a project, the plotted relationship curve for each well will always follow the same slope as before unless the input gas channels or breaks through to a producer.

There will, of course, be a gradual increase of pressure noticed, as these tests are repeated, in obtaining input volumes equal to those obtained in previous tests; however, this is normal for a properly functioning input well in that reservoir pressure is built up as gas injection continues until input gas reaches producers. From this point on input characteristics should remain fairly uniform due to the uniformity of resistence to movement of the input gas since a circuit has been established between the input and producer.

### Value of Data

As to the value of input characteristics and produced gas data obtained by testing described, assume that in project illustrated by Figure 1 both input and producers have been thoroughly tested, the data recorded, and injection has been proceding for considerable time. Further assuming this theoretical project to be a normal one, it will take considerable time before any increase in either oil or gas production is noticed at the producers. Folowing this first increase, the danger point in a normal repressuring project is present due to the possibility of input gas channeling to a producer and not establishing an oil-moving pressure gradient. Periodic gas-oil ratio tests will reveal channeling of input gas if a sudden and large increase is noticed in produced gas volumes. If channeling takes place, the producer affected usually shows an increase in both oil and gas production at first followed by a decrease in oil production and an increase in gas production. The increase in gas production will depend on the completeness of the channeling as well as input gas volumes.

It has been found that corrective measures applied to producing wells to prevent or stop channeling, such as holding a back pressure on the well or raising the fluid level in the same, does retard gas movement through the channeled section but also decreases or completely stops oil production due to the increased back pressure applied to the producing well bore. It is being generally accepted that any corrective measures to control channeling should therefore be applied to the input well.

**Volume, pressure control at input well are held to be more successful than corrections at producers**

If producing well A (Figure 1) shows by gas-oil ratio testing the characteristics of a channeled producing well, while the remainder of the producers in the field exhibit normal gas-oil ratio trends, corrective measures must be applied to the input well from which the gas is channeling. It is of course obvious that a channeled input well will be of little if any value for repressuring purposes.

### Dependable Method

Although there are many experimental methods used for tracing gas movement through a resorvoir such as the introduction of color or odor agents into the input gas stream, the most dependable is the use of input characteristic data. As soon as the increase in gas production in producer A is classified as channeled gas, input characteristic tests should be run on each input well. Producer A should not be shut in during this testing period.

It will be found that each of the inputs possess the same general input characteristics as were obtained in previous tests except the one from which input gas is channeling. Channeling is very noticeable when the characteristic curve is plotted, especially when a series of curves from previous tests are available. Instead of having the same general pressure volume relationship as before, the channeled input well will show an extremely large increase in volume with small increase in input pressure.

From Figure 1 it probably would be assumed that either No. 1, 2, or 3 had channeled to producer A. However, taking of the input characteristic test might show that No. 4, or the one farthest away from the producer, has channeled. An illustration of the normal and channeled input characteristic for well No. 4 is illustrated in Figure 3. To well No. 4 should therefore be applied a suitable channel stopping measure, some of which have been fully described in various articles.

By the use of this hypothetical illustration it may be seen that it is absolutely necessary to keep accurate input and produced gas volumes and pressures during the life of a normal repressuring project. Gas movement may be roughly traced by such data, channeled producers immediately identified and channeled input wells located. These facts should of course be known for even a one input-well project, and are a necessity in a multi-input project. Regardless of the physical nature of a reservoir or the size of project being considered, no engineer can effectively control the project unless he knows the direction of gas movement, can identify channeling and correct it. Testing of input and producers as described are the two seemingly indespensable methods available for determining these factors.

In water flood projects, input and producer tests and records are taken and recorded in the same general manner as in repressuring. However, in most water floods, well to well distance is much closer than in repressuring and input-producer spacing is based on a predetermined geometric pattern. Consider-

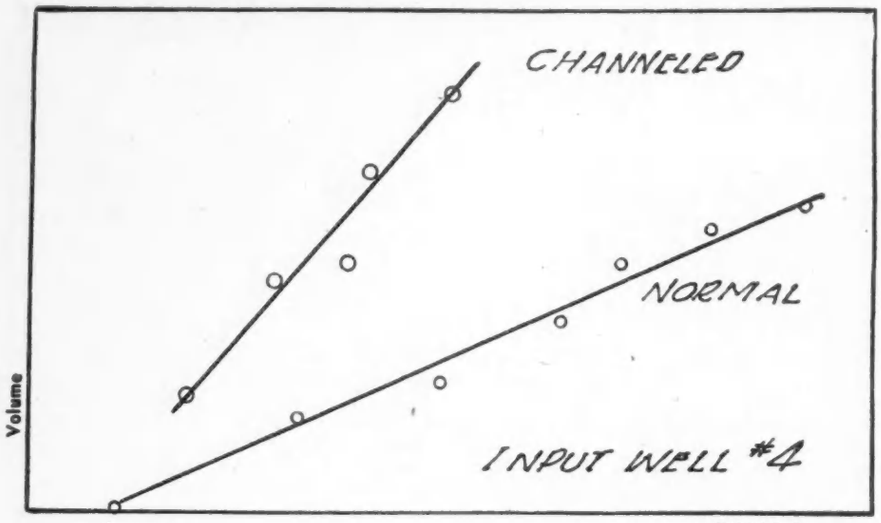


FIGURE 3

able, if not complete, drilling or redrilling is usually done prior to the start of flooding operations and plentiful data are available for the calculation of proper input rates and pressure to be used. However, it is still necessary to continuously analyze movement through the reservoir. Water flooding shows the same general pressure volume relationships in that the pressure required to inject a constant volumt into the reservoir increases with the life of the project until a cycle is established or resistance to flow stabilized. Inasmuch as the use of input and produced volume data have been discussed for a repressuring project, it is sufficient to say that they have equal importance in water flooding and should be religiously recorded in both cases.

### Revealing Maximum Data

However, in water flooding operations, input characteristic curves serve a still more important purpose in that they show the maximum input pressure which may be used, as well as corresponding volumes for any pressure between the maximum and entry values. This maximum pressure is illustrated by Figure 4. At a value which closely approximates one pound per square inch per foot of depth between the surface and the oil sand a so-called critical pressure is obtained. Although the critical pressure varies from .8 to 1.7 pounds per foot of depth in various flood projects throughout the United States, the average is approximately one. This value, however, can be determined for any input well by running an injection characteristic test and should never be exceeded. Theoretically, therefore, for a well 1000 feet deep, the input well head pressure should not exceed 1000 pounds per square inch, generally speaking.

Without going into a detailed discussion of the probable phenomena which takes place when this point is reached, it is sufficient to say that indisputable data are available which prove that if input pressures are applied in excess of the critical, the over burden is lifted or the formation ruptured radially in horizontal, vertical, or diagonal planes. If injection is continued after the critical value is passed, large quantities of input water are usually noticed in a very short time in surrounding producers. Obviously, such a condition can not be economically tolerated. It is therefore advisable to determine the critical values by injection characteristic tests in the early life of a project and never to exceed them. It should be mentioned that various wells, even though in the same immediate territory, possess different critical values for some unexplainable reason and no empirical formula is available for predetermining them, except the general rule of thumb outlined above. In addition to determining critical injection pressures, water flood input well injection characteristic data kept during the life of a project also show the engineer the rate at which input water is filling up reservoir void space, when the input water from any well meets the advancing flood front from other inputs, and the rate of movement following the junction of flood fronts.

### Early Test

During the early injection life of a well (assuming no channeling) an injection test should be made. The same procedure should be followed as that outlined in testing gas input wells. By taking these tests periodically through the life of an input, it will be seen that the pressure necessary to input certain volume is at its lowest value when injection is first started, as the void space is gradually filled up around the well bore. Inasmuch as the pressure is usually kept constant at a value just under the critical, input volumes gradually decrease as resistance to flow increases, until a cycle is established. At this point the volume gradually levels off. However, this change in volume does not affect the input characteristic of a normal well except that the pressure required to put a certain volume in the reservoir will increase until stabilized. However, the slope of the volume-pressure relationship curve will remain the same, as in repressuring.

The above statement assumes that the sand is not filling up with solids or minerals from the water and that water composition remains the same. Experimental work shows that different pH values, hardnesses, etc., will affect the water input rate, so any change in injection characteristics should be correlated with water composition before drawing conclusions.

Injection characteristic tests on inputs are used accordingly to show the value of varied water compositions, of acid treatments on input rates, and serve as bases for recommendation for treatment to increase or decrease input well acceptance rates.

Producing and injection characteristics of all wells in any secondary project are, as stated previously, absolutely necessary for proper control and analysis.

In repressure projects the data are used to determine gas movement, its effectiveness, channeling action, assist in determining plant size and pressure, guides for development of empirical formulas for future work, reservoir drainage and other items.

In water flood projects these data serve as bases to determine critical and entry input pressures, plant size and pressure, value of different water compositions regarding input rates, radial movement of water, effectiveness of the flood, effectiveness of the well pattern, and channeling action.

In both cases they are used to determine the effect of any corrective measures applied to either input or producing well.

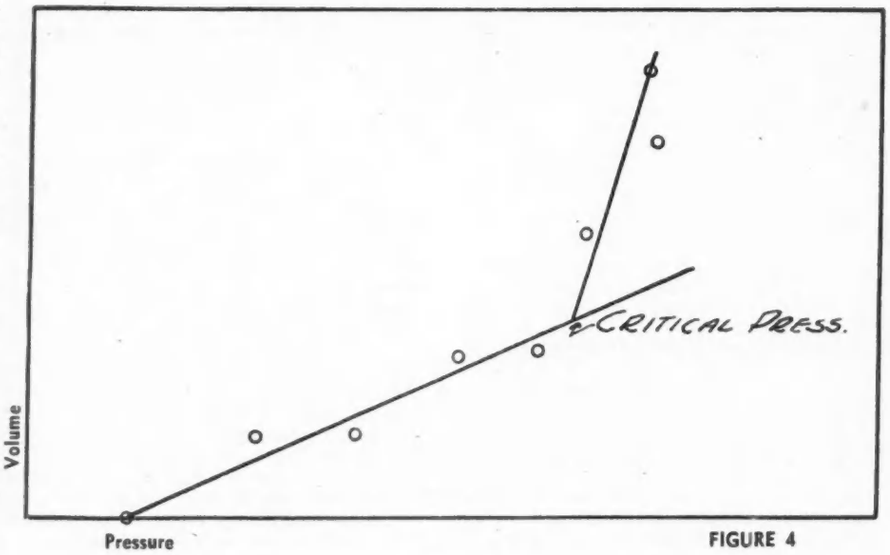


FIGURE 4

# Operating Advantages Of Unitized Electrical Equipment in the Field

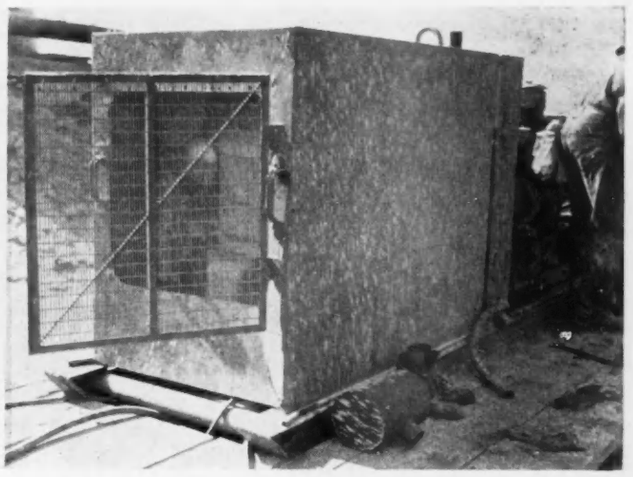

**FIGURE 1. Completely protecting individual engine and generator units, these housings may be easily slid off the base guides by one or two men. Engine cover has been removed for minor repair work. Screened opening prevents trash accumulation caused by draft through housings.**

By GILBERT M. WILSON, Staff Writer

A NUMBER of operating advantages are being realized from the complete unitization of electrical generating and transmission facilities on the streamlined rig operated by a major company. Mounted on skids, the heavy generator unit has two separate housings, one for the engine, the other for the generator, which are easily removed individually by two men and as easily replaced. The other principal unit is a skid-based, screened-in enclosure which contains in conveniently accessible array the several switch boxes, safety switch and a metal box containing extension cables.

The generator unit, mounted on an I-beam skid base about 15 feet long, is both compact and easily accessible for repairs and maintenance. At the far end of the unit (Figure 1) is mounted the multi-cylinder engine and on the other end the 200-ampere, 230-volt generator, safety switches and meters. The two sections are separated by the engine radiator. Housing for these two separated units are unique in that they are quickly and easily removed by sliding them along a prepared groove or guided track on the top side of the skid base members. These guides, made of pieces of light pipe welded along the length of the base, are sufficiently high to hold the large metal housings in place against wind and vibration of the unit itself. The rectangular housings are riveted and welded metal sheets measuring six feet long, slightly over four feet high, and three feet wide. In the generator housing a doorway some 30 inches square permits access to switch boxes and other controls. A hinged, screened door may be closed over this opening, protecting the interior from accumulations of trash when the unit is running and during which times a strong ventilating draft circulates through the housing. The housings are easily removed, it being necessary only to grasp the two large handholds welded to the end of the housing and pull the unit straight out, the bottom edges skidding along the guided length of the skid base.

The other unitized section also is skid-based. A screened enclosure made of expanded metal welded to strengthened members of one-inch pipe, it encloses the safety switch box, and switch boxes for the bug blower, sand screening equipment, torque converter cooler and air compressor. All boxes are hung on a lateral member of 1½-inch angle iron. Beneath the safety switch is a rectangular box about 22 inches square and seven inches deep in which is coiled unused cable which is not required in connecting the two principal units. The latter feature is important for it permits separation of the two units if needed to conform with arrangement of other rig equipment. Shown in Figure 2 with one of the screened sides temporarily removed, the complete assembly is easily picked up for transporting by means of the two steel lifting eyes welded to the top of the vertical stiffening members of four-inch channel located at either end of the unit. Box outlets are so arranged that conduiting can be run under ground immediately beside the unit, making one ditch serve for the greater part of the distance over to the rig.

Removal of the side panels of the enclosure is simple, and they are as easily replaced. Welded to the base at each end of the opening is a steel stud over which is dropped the bottom ends of the one-inch pipe frames of the panels. With the bottom secured at these two points, the screened panel is swung into place where it rests against small metal projections and subsequently latched in place.

The unusually efficient job of unitizing the electrical generating and control box equipment is repaying dividends to this company. On this particular drilling unit, operations were confined chiefly to drilling in remote areas where the majority of rig auxiliary power-driven units are dependent upon electricity generated on the spot. Completely housed for maximum protection from the elements, and easily moved about, the units contribute considerably toward cutting rigging-up and operating expenses.

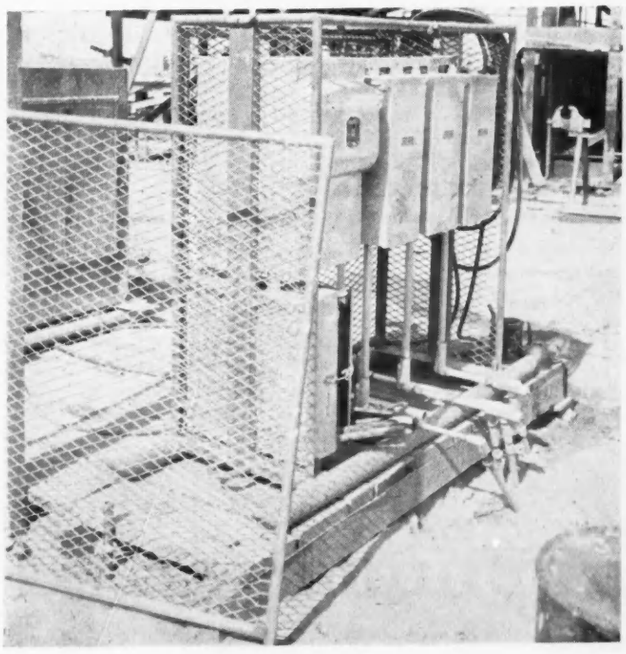

**FIGURE 2. Neatly arranged in the screened enclosure, this centrally-located bank of switch boxes is carried as a complete unit. Front and rear panels are easily removed or locked in place. Spare extension cable is coiled in rectangular box below safety switch box.**

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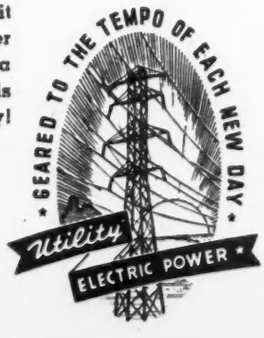


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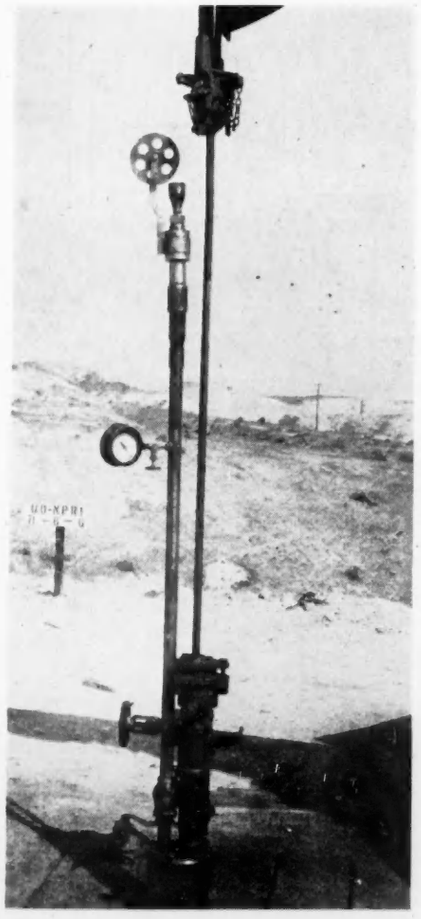
# Running Instruments in Annulus of Tubed Wells

By C. C. OLSON

PRODUCTION of oil at Naval Petroleum Reserve 1 during the war period required that well down time and man hours of pulling labor be kept as low as possible consistent with efficient operation. Most of the wells were produced by sucker rod pumps which made the obtaining of periodic static subsurface pressure surveys a slow and costly undertaking.

In order to reduce the down time and also to eliminate the use of the pulling unit and crew, 100 wells were equipped with annulus type tubing heads. In these key wells 180 runs were made. The instrument fouled around the tubing, preventing its removal 39 times. This required the use of the pulling unit and crew to raise the head in order to free the instrument. In order to eliminate the use of the pulling unit and crew a hydraulic lifting device was designed and constructed and the instrument was then removed in approximately one hour by two men.



Lubricator in position on pumping well for running instruments in annulus.

The use of the annulus head and the portable lift equipment saved eight crew hours on each pressure measurement.

This article is presented to add to heretofore published or discussed methods, advantages and savings incurred by making wire line measurements, depth pressure static tests, pumping draw down surveys or thermometric surveys in the annulus between casing and tubing. No claim is made for originality in making runs in this manner.

### Well Head

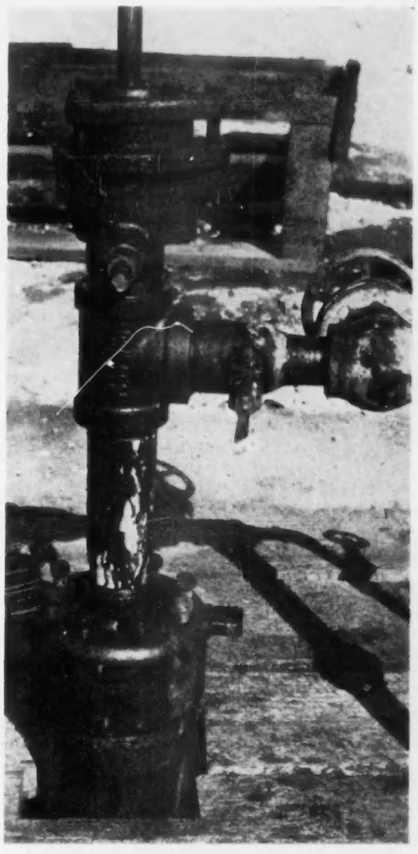
The first thing considered was the well head itself. The shop-made head consisted of three parts, the body, the landing plate and the bonnet. It was decided that only one part would need to be changed, this being the landing plate, which was a steel plate with a tubing collar welded in its center.

The ordinary design of the head would not leave clearance for the adding of an additional opening of 1¼ inch diameter if the casing was as small as seven inch. Therefore, it was necessary to shift the position of the tubing collar from the center of the plate as far as possible toward the edge. This change allowed space for the gate valve which was needed to close the annulus opening. The annulus opening into the landing plate should be approximately three degrees from vertical in order to increase the clearance between the pumping fittings and the lubricator used when running the instruments. It was also necessary to cut away a small portion of the overhanging lip on the stuffing box.

Most all types of instruments are equipped with a removable rope socket. For annulus runs it was preferred to change the design so it would have a long thin taper from the size of the line opening to the outside diameter size of the instrument, avoiding all shoulders and abrupt angles. This change reduced the damage done to the instrument when it collided with the tubing couplings.

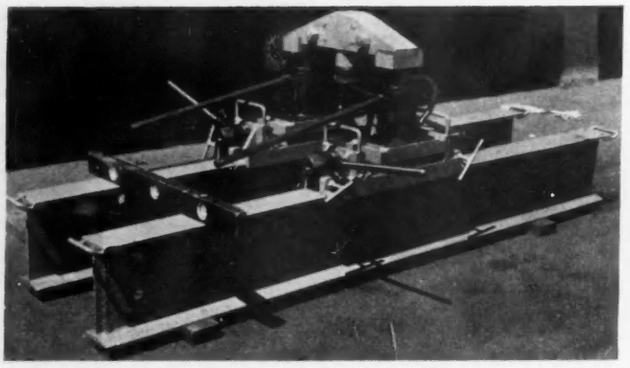
Instruments have been run in the annulus at a line speed of as high as 500 feet a minute, although the rate of withdrawal should not exceed 250 feet a minute to minimize damages to the instruments. Wide variations in safe line speeds were not uncommon. In running in the hole the line tended to wrap around the tubing and if when pulling the instrument it followed the same path as it did on the downward trip, the wraps would unwind and the instrument would come directly back into the lubricator.

If the instrument did not follow the same path when it was raised to the cas



Conventional pumping head before converting to annulus type.

Pumping head after change in landing plate to provide annulus opening.



Side-angle view of hydraulic well head lifting equipment.

ing head, it might either have a right or left hand wrap around the tubing which necessitated raising the tubing to center it to remove the instrument.

### Cost Cut

Annulus surveys resulted in a lower cost as it was no longer necessary to pull and run rods. When the instrument became fouled the crew time was only ½ what it would have been to have pulled and re-run the rods. The practice of calling out the pulling unit crew, even though a large saving in the survey cost was evident, became a nuisance as the crew usually was busy on another well. To further reduce the expense and also be able to remove the instrument without the pulling unit, a light weight hydraulic lifting device to raise the tubing a few inches was designed and constructed.

The lifting device consisted of two "I" beams of sufficient length to span the cellar opening. On each of the beams was placed an assembly which consisted of a base plate resting on the beam and a top plate. The plates were separated by two rows of five 1¾-inch steel balls encased in a strap iron rack. Extending from the top plate and through vertical end pieces attached to the base plate are two ¾-inch bolts with nuts on the outside of the end section. By these bolts the movement of the top plate was controlled.

On each of these roller assemblies a 12-ton hydraulic jack was mounted. The pressure cylinder of the jacks was connected by a hose so the pressure was equalized between the two jacks to insure a straight lift. The jacks raised a "T"-shaped split lifting head screwed into the top of the pumping tee. A 1½-inch hole was drilled through the center of the lifting head to clear the polish rod and the head was held together by two 1-inch bolts, and, to obtain perfect alignment of the two sections, four tapered dowel pins were used.

The lifting operation was simple, fast, and easily accomplished by two men. When an instrument became fouled, the lifting equipment was obtained and the following procedure was used to free the instrument.

1. Break the lead line connection.
2. Unscrew stuffing box and slide it up on polish rod.
3. Unscrew bonnett on tubing head.
4. Install pick up head in pumping tee.
5. Place beams, rollers, jacks in position.
6. Jack up tubing approximately one inch.
7. With rollers move tubing to center of hole. This allowed sufficient room for the instrument to pass around the tubing.
8. Move tubing back to normal position.
9. Remove instrument through 1½-inch annulus opening. Reverse the order of operation and re-connect well head. Time required was not more than one hour.

This method proved itself in both a cash saving as well as relieving the well pulling unit crews of the nuisance of freeing fouled instruments.

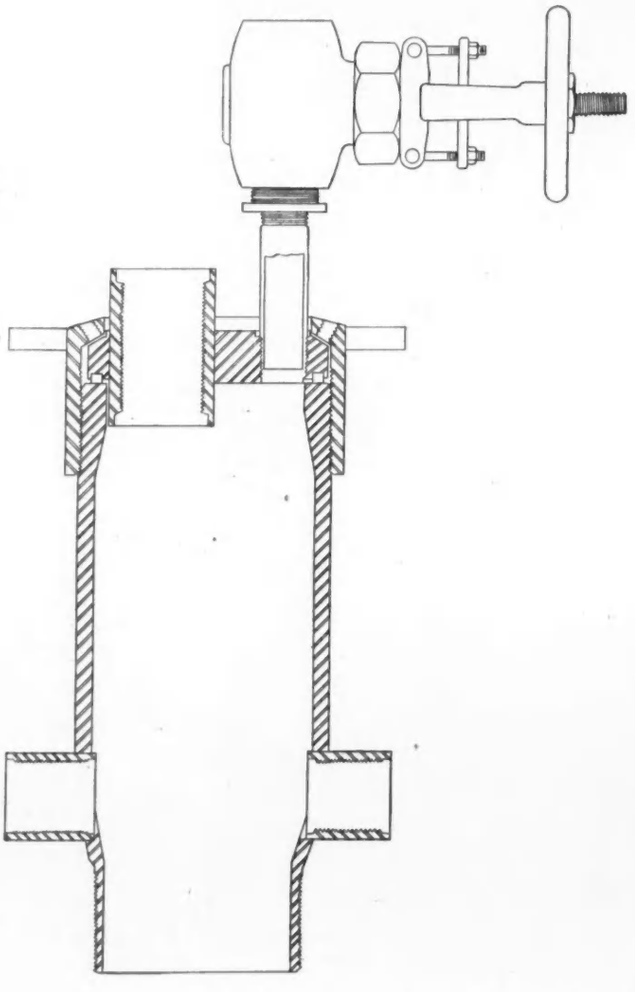
Table 1 shows the savings incurred on 100 wells with a total of 180 annulus runs follows: This includes only the charge in man hours for pulling unit and crew of four men. It does not include the time of the operator of the measuring line hoist.

The table indicates the saving by running in the annulus. The additional cost of an annulus head over the conventional design was approximately $75. and this cost was paid out by the saving made in one run through the annulus opening.

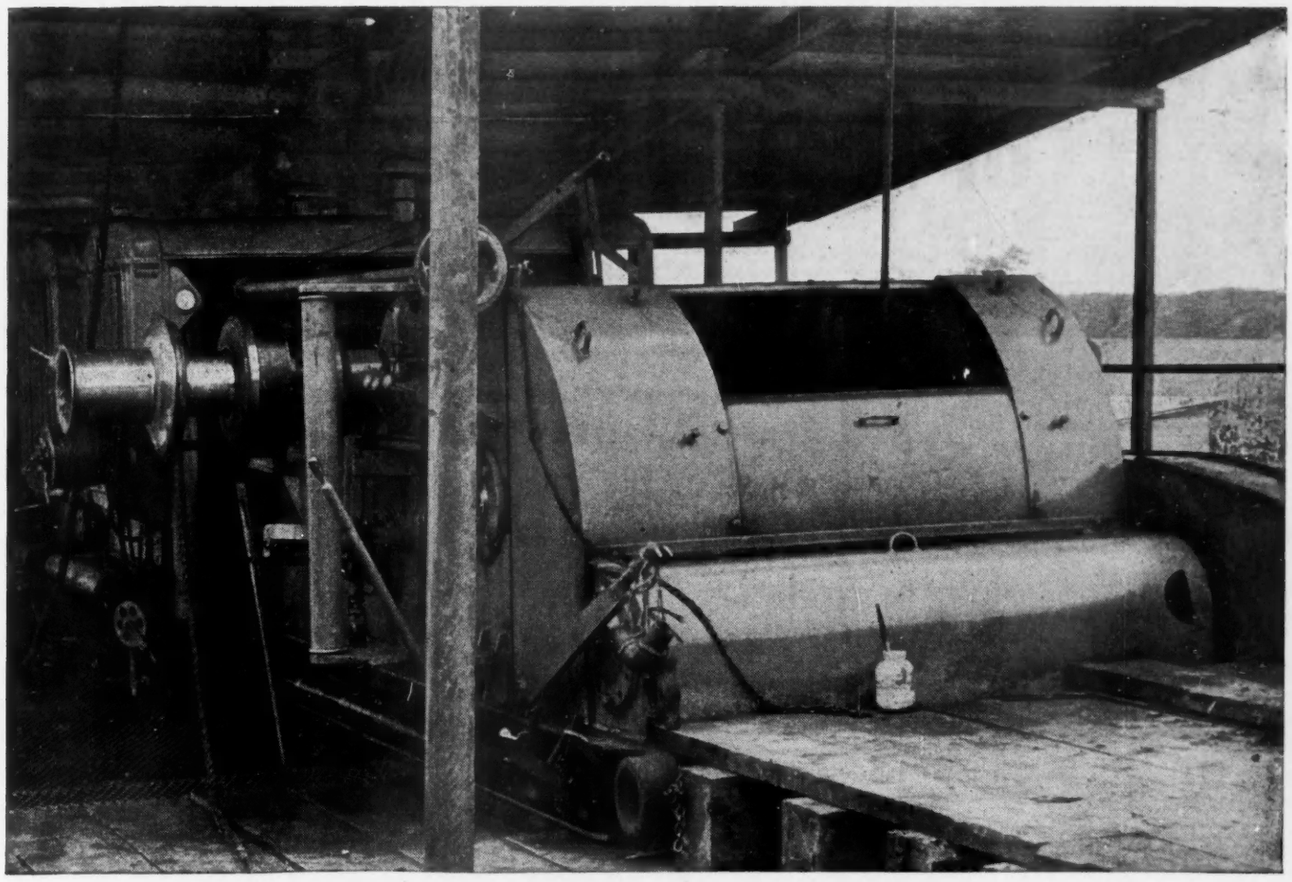
The annulus method of running instruments is feasible for all pumping wells up to 4000 feet in depth. At present, conclusive data on wells deeper than 4000 feet are not available.

**TABLE 1**

| | Crew Hours |
|---|---|
| Pulling unit and crew time to pull and run rods for conventional survey on 180 tests in 3000 ft. wells | 1440 |
| Pulling unit and crew time to free instrument which fouled 39 times in 180 runs | 117 |
| Average crew time hours per annulus runs, 180 tests | 0.65 |
| Total saving incurred by annulus method, 180 tests | 1323 |
| Average saving per well (180 tests) | 7.35 |



Annulus type 2½-inch tubing, seven-inch outside diameter casing. Pumping head with two-inch side outlets.



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# Use and Chemical Removal of Aluminum Pipe

By C. E. CLASON
Halliburton Oil Well Cementing Company

THE use in oil wells of light weight aluminum alloy had grown considerably before the war and has increased since. Various applications are noted, from perforated liners and blank sections to various tools, packers, etc., which have the advantage of easy drilling and manipulation in well completion and future operations.

In the California area long perforated liners are used which allow easy removal for either reconditioning or deeper drilling. In the Illinois area, blank sections are used opposite secondary pays and are removed upon the depletion and plugging back from a lower pay. Some few cases exist where the pipe is set through the pay and cemented with a secondary section on the bottom. This may then be gun-perforated, or removed entirely if necessary, to increase production. Oklahoma and North Texas now have many wells with the type of blank section installation, usually called windows. There are still many areas where the advantages of this practice have yet to be learned. Use of the aluminum pipe sections should grow as more is known of its resistance to action of corrosive waters and the knowledge of its benefits are more widely disseminated.

Most wells east of the Rocky Mountains have used this pipe as windows. When the time came to remove the aluminum section, it was necessary to move in a drilling or work-over rig to cut it out. In case the pipe was cemented with an aluminum section at the bottom, later removal would mean holding the drilling rig on the job.

**Constant increase is noted in the use of light weight aluminum alloys in oil wells**

This led to consideration of a chemical method for dissolving the aluminum section without attacking the steel.

### Refraction of Aluminum

Various reactions of aluminum with acids and alkalis are known. Although a reaction may be the basis of a future process, its application, control and efficiency must be studied. Time required, ease of handling and costs are practical problems to be considered. Safety to personnel and possible well damage are important factors.

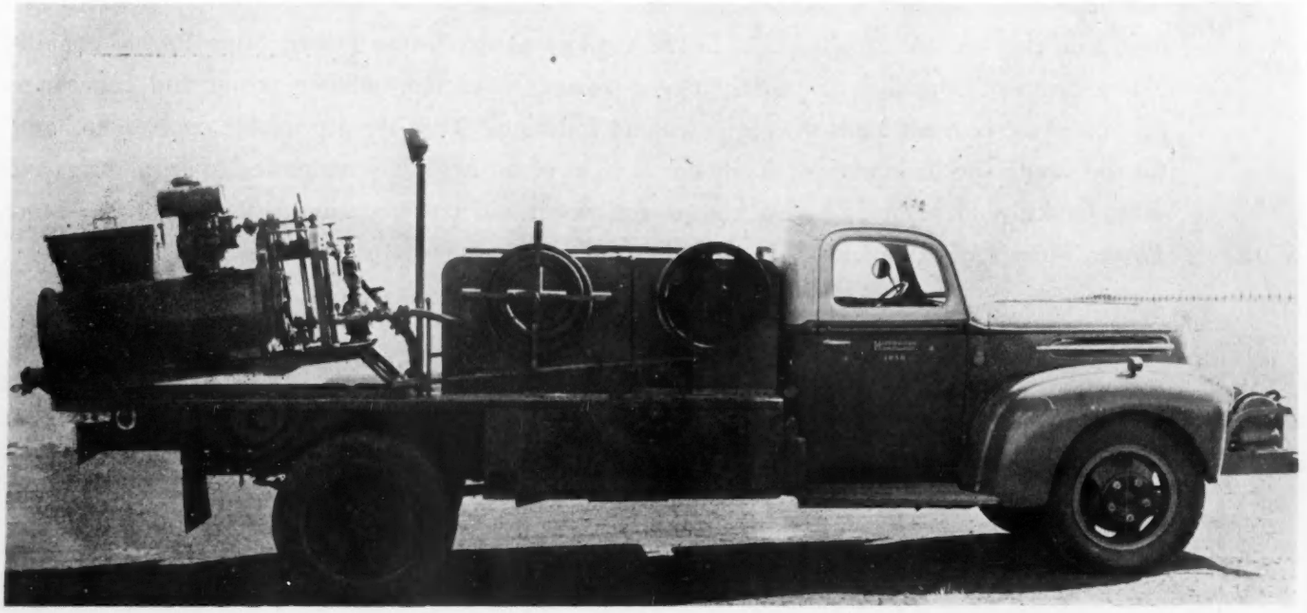
The first thought with respect to materials was the same acid used to increase permeability in limestone formations. Hydrochloric acid will react with aluminum and generates heat. Hot acid, and especially boiling acid, attacks steel. As the volume of an aluminum section will not hold enough acid to completely dissolve the metal, it must be a batch proposition and will call for from six to 13 batches of 20° Be acid, depending upon the thickness and amount of aluminum present.

Circulation of acid or any other chemicals would not be feasible as the reaction would be extremely long drawn out because of heat loss to other parts of the well and a large volume of solution would be required.

In a batch process, the well will act as a reflux condenser, constantly boiling off water, which, with acid vapors, will cause great damage to the adjoining steel pipe. Part of the acid will be expended on the steel pipe.

Caustic soda attacks aluminum. From this reaction, hydrogen is generated and soluble sodium aluminate formed. The right mixture of hydrogen and air is explosive and inflammable when ignited by a spark. This could easily occur during trips of a bailer. But more heat is generated and a more concentrated solution can be used than with acid, which is an improvement from a time standpoint.

A reaction was found containing an additional compound with caustic soda and aluminum cuttings, which was pat-



Truck showing mixer in tilted positon for removal of chemical solution.

ented years ago as a means of introducing heat to the bottom of a well. By the addition of sodium nitrate in the correct proportions, a soluble sodium aluminate was obtained, but the gas generated was ammonia. This gas is not explosive or inflammable and, in the calculated quantity which might appear at the top of a well, not dangerous or even offensive.

### More Heat

Calculating the heat of reaction showed this mixture, used in the proper proportions and strength of solution, generated 66 percent more heat than caustic soda alone. This would have a bearing on the time required to do the job and greater heat would be more apt to crack and disintegrate the cement behind an aluminum section.

Theoretically, with the solutions now used, there is enough heat generated to cause a temperature rise of 1185° F. The aluminum dissolves, forming a heavy solution which can be bailed out, and ammonia gas. There is no reaction with the steel pipe.

With the above facts established, procedure was directed, keeping field conditions in mind. Pressure and subsurface conditions were simulated and results obtained. Finally, actual work in wells met with success.

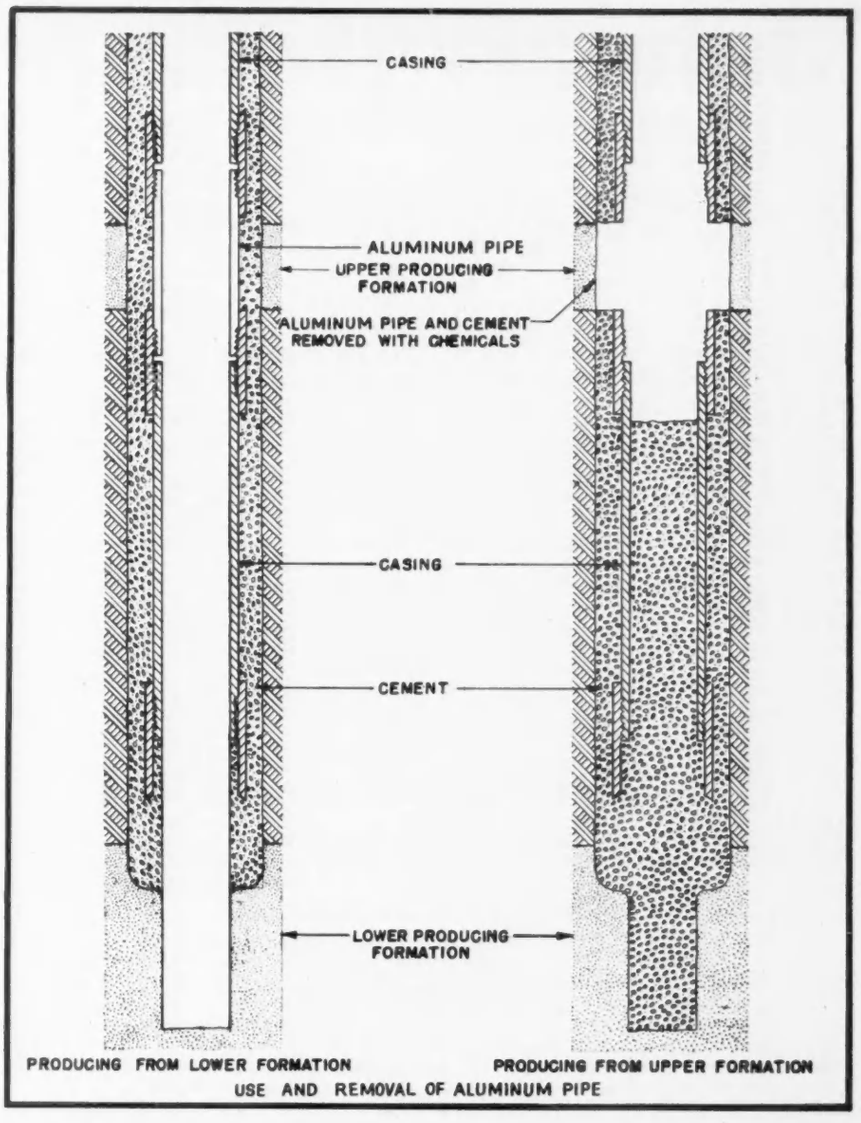
In plugging back to abandon a lower formation and then removing the aluminum pipe, it is essential to have the plug quite close to the bottom of this pipe. With too much open hole below, which must be filled with the chemical solution, there is a concentrated action nearer the bottom of the pipe, due to flow currents and refluxing, which may cause it to break through before the top part is consumed. The plugging back is readily accomplished by the use of quick-setting cement, which is a part of the same dump-bailer service and can be accurately done. This material is very stable and is not affected by the tremendous heat and reaction that takes place above it.

Wherever possible, the well should be bailed clean and practically dry of fluid, to insure a low pressure head. The reaction will take place under pressure, but reaction times are longer. Ordinarily, the first batch is put in with a special dump-bailer and allowed to react for two hours before removing with the operator's bailer. Each succeeding batch will require only one hour reaction time after placement. Varying pressures, due to a head of fluid, require longer time of contact until at 2000 pounds pressure head, the reaction periods may be as much as nine hours.

### Quantity of Chemicals

Aluminum pipe is made in standard sizes and wall thickness to suit well conditions. Therefore, the amount of chemicals required and the number of batches depend upon the weight of pipe to be removed from the well. Thin wall pipe requires three batches and heavy wall from four to five, depending upon the size. Most jobs require from six to 12 hours at ordinary pressures and depths found in Illinois. Deeper wells requiring longer time for bailer runs will naturally extend the total time required to perhaps 24 hours or more.

To date, more than 200 jobs have been done with marked success in the Illinois area, and Oklahoma has now had several on wells from around 2000 to 7000 feet deep. From eight feet up to 60 feet of pipe has been removed.



USE AND REMOVAL OF ALUMINUM PIPE

### Formation Not Affected

The formation behind the pipe is not affected by any part of the chemical reaction, nor is there any plugging effect. The great heat serves to crack up and disintegrate the cement behind the aluminum section only, allowing the oil to come in after cleaning out. Some wells have been shot with nitroglycerine following the pipe removal. Wells in limestone have been acidized.

It was thought that perforating aluminum pipe would spoil the chances for chemical removal in some cases. If too much permeability existed, the chemical solution would perhaps tend to go out into the formation before reacting. It has been found that if the well can be lowered below its static level, the solution will stay in place and even react in spite of a marked increase in fluid level as the job progresses. Too much increase in fluid level might necessitate bailing down before the job was finished, but enough has been learned so that nearly any condition can be overcome and the pipe removed.

The removal of pipe in this manner has been done wherever it was possible to run a bailer. In some cases, the amount of pipe concerned might require chemical charging with two dumps of a long bailer, but, in most cases, the work has been done with each batch being placed all at once.

When the records are such that there is doubt as to the exact location of the aluminum section in the well, it can easily be located by a magnetic survey run by well logging equipment.

Chemical removal of aluminum sections has proven to save time and money.

## *New Electric Circuits for West Texas Fields Planned*

Texas Electric Service Company, Fort Worth, has authorized an $8 million expansion program that will include new circuits for the servicing of West Texas oil fields. A 66,000-volt transmission line will be extended from its Odessa substation to the North Cowden and nearby fields, and a lateral to the Fullerton multi-pay field, Andrews County. A similar capacity circuit will be built from Wink substation to the Keystone field, Winkler County. Laterals from these trunk lines will aggregate 80 miles.

# January Drilling Declines

DRILLING activity showed a considerable decline during the month of January. While the curtailment was attributable, in some degree, to the season and to the serious steel problem, it tends to substantiate THE OIL WEEKLY's annual forecast, (Feb. 11, 1946, page 124), which indicated less drilling for 1946. Figures compiled on wells drilling at the beginning of February also showed a decrease compared with preceding months, and further indicates the decelerated rate of drilling.

In the five weeks ended February 2 there were 2358 well completions in the United States, an average of 472 wells per week, lowest since May of last year. This average compares unfavorably with the 521 per week in December and 535 in November of the previous year, but was a 12.6 percent increase over the 419 wells weekly in January, 1945.

Increases over the January of last year rate of completing wells were recorded in Texas, Oklahoma, Kansas, Louisiana and several other states, while declines occurred in New Mexico, Illinois, Michigan, Mississippi and Kentucky. Texas was up nearly 9 percent over a year ago, in reflection of gains in about ½ its districts, which included North, East and Upper and Lower Gulf Coasts. Other states showing increases were Oklahoma by 30 percent, 68 percent for Kansas, 65 percent for New York, 17 percent for Pennsylvania and a 13 percent increase for Louisiana. States recording decreases in well completions in comparison with last year included New Mexico by 26 percent, 54 percent for Mississippi, 21 percent for Michigan, and 7 percent for Illinois.

At the beginning of February there were 3767 wells drilling or rigging up in the United States, a decrease from the 4043 a month earlier. States that were responsible for this decline included Texas, California, Oklahoma, Illinois, New Mexico, Colorado, Arkansas and Wyoming. Texas districts showing decreases in rigs in operation included North, East and West Central Texas and Upper and Lower Gulf Coasts.

The 3767 rigs active on February 1 represented a decrease of 68 operations or 1.8 percent under the figure of the same date the year before. This slight decrease in active rigs in comparison with the 13 percent increase of well completions over January a year ago reflects an increased efficiency in drilling, due to an increasing of experienced manpower, and easing of the scarcity of materials and equipment.

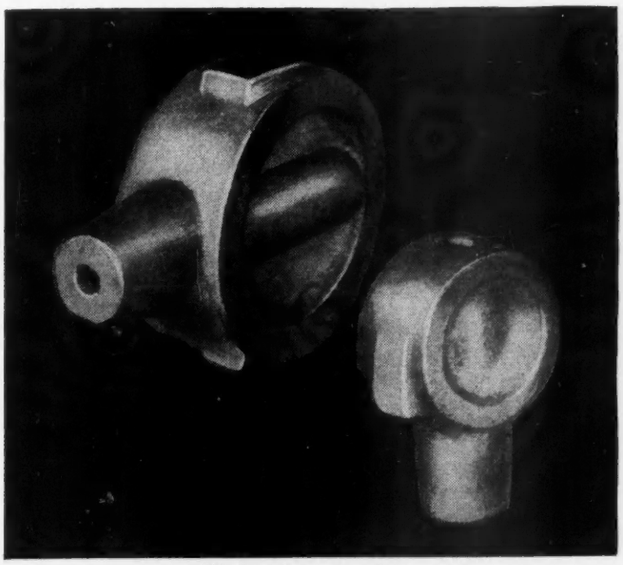
## Well Completions in the United States During January, 1946

**(Figures compiled from weekly reports of editorial staff men, with following exceptions: Illinois from Illinois Geological Survey; Missouri from Missouri Geological Survey; Allegany, New York, Bradford and Kane-Clarendon, Pennsylvania, from The Producer's Monthly; Tennessee from Tennessee Division of Geology)**

| STATE OR DISTRICT | MONTHLY COMPLETIONS: January, 1946 — Details for January, 1946 — New Wells — Oil* | Gas | Dry | [4]Others | Old Wells Deepened | Total Completions — Jan., [1]1946 | Dec., [2]1945 | Jan., [3]1945 | Percent Change from Year Ago in Weekly Average | Total Footage January, 1946 | RIGS IN OPERATION — Details for February 1, 1946 — Drilling | Rigs Up | Shut Down | Total: Drilling and Rigging Up — Feb. 1, 1946 | Jan. 1, 1946 | Feb. 1, 1945 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | 1 | .... | 2 | .... | .... | 3 | 2 | 3 | ..... | 17,222 | 1 | .... | 1 | 1 | 4 | 1 |
| Arkansas | 8 | 1 | 6 | .... | .... | 15 | 25 | 14 | + 7.1 | 71,546 | 21 | 1 | 9 | 22 | 30 | 19 |
| California | 148 | 8 | 34 | .... | 6 | 196 | 125 | 196 | ..... | 799,847 | 229 | 47 | 43 | 276 | 292 | 358 |
| Colorado | 9 | .... | 1 | .... | .... | 10 | 9 | 5 | +100.0 | 64,807 | 42 | 5 | 14 | 47 | 64 | 15 |
| Florida | .... | .... | 3 | .... | .... | 3 | 1 | 1 | +200.0 | 28,245 | 3 | 2 | 1 | 5 | 8 | 5 |
| Georgia | .... | .... | .... | .... | .... | .... | .... | 1 | ..... | ..... | .... | .... | 2 | .... | 2 | 2 |
| Illinois | 92 | .... | 62 | .... | 2 | 156 | 162 | 167 | — 6.6 | 383,614 | 211 | 39 | 18 | 250 | 271 | 180 |
| Indiana | 11 | 1 | 9 | .... | 1 | 22 | 22 | 21 | + 4.8 | 42,754 | 45 | 20 | 14 | 65 | 55 | 38 |
| Iowa | .... | .... | .... | .... | .... | .... | .... | 1 | ..... | ..... | .... | .... | .... | .... | .... | 1 |
| Kansas | 108 | 27 | 74 | .... | 3 | 212 | 174 | 126 | + 68.3 | 702,866 | 226 | 23 | 17 | 249 | 308 | 233 |
| Kentucky | 26 | 7 | 20 | .... | 1 | 54 | 51 | 58 | — 7.4 | 98,666 | 37 | 14 | 4 | 51 | 64 | 53 |
| Louisiana | 79 | 7 | 24 | .... | 1 | 111 | 103 | 98 | + 13.3 | 765,066 | 176 | 11 | 12 | 187 | 195 | 174 |
| North Louisiana | 38 | 6 | 15 | .... | 1 | 60 | 54 | 39 | + 53.8 | 303,210 | 76 | 8 | 5 | 84 | 89 | 57 |
| South Louisiana | 41 | 1 | 9 | .... | .... | 51 | 49 | 59 | — 13.6 | 461,856 | 100 | 3 | 7 | 103 | 106 | 117 |
| Michigan | 28 | 7 | 25 | .... | .... | 60 | 49 | 76 | — 21.1 | 146,277 | 97 | 11 | 19 | 108 | 119 | 125 |
| Mississippi | 15 | 1 | .... | .... | .... | 16 | 18 | 35 | — 54.3 | 162,181 | 31 | 3 | 3 | 34 | 44 | 58 |
| Missouri | .... | 1 | .... | .... | .... | 1 | .... | 6 | — 83.3 | 586 | 4 | .... | 5 | 4 | 4 | 9 |
| Montana | 22 | .... | 3 | 2 | 1 | 28 | 11 | 13 | +115.4 | 68,402 | 53 | 5 | 10 | 58 | 59 | 41 |
| Nebraska | .... | .... | .... | .... | .... | .... | 1 | .... | ..... | ..... | 1 | .... | 3 | 1 | 5 | 1 |
| New Mexico | 24 | 3 | 10 | .... | 1 | 38 | 30 | 51 | — 25.5 | 131,959 | 68 | 3 | 18 | 71 | 99 | 103 |
| New York | 64 | 1 | 1 | 36 | .... | 102 | 84 | 62 | + 64.5 | 138,486 | 51 | 10 | 28 | 61 | 64 | 64 |
| Ohio | 18 | 41 | 28 | .... | .... | 87 | 73 | 64 | + 35.9 | 236,083 | 154 | 22 | 38 | 176 | 182 | 180 |
| Oklahoma | 144 | 11 | 96 | 1 | 8 | 260 | 192 | 200 | + 30.0 | 935,910 | 423 | 39 | 27 | 462 | 507 | 492 |
| Pennsylvania | 98 | 20 | 7 | 107 | 1 | 233 | 215 | 200 | + 16.5 | 395,566 | 207 | 31 | 71 | 238 | 200 | 223 |
| South Dakota | .... | .... | .... | .... | .... | .... | .... | .... | ..... | ..... | 3 | 2 | 2 | 5 | .... | .... |
| Tennessee | .... | .... | 1 | .... | .... | 1 | .... | .... | ..... | 706 | 4 | .... | 1 | 4 | 4 | .... |
| Texas | 393 | 47 | 230 | 2 | 11 | 683 | 652 | 628 | + 8.8 | 3,021,394 | 927 | 71 | 116 | 998 | 1,103 | 1,297 |
| East Texas Border | .... | 19 | 1 | .... | .... | 20 | 15 | 2 | +900.0 | 127,350 | 29 | 2 | 6 | 31 | 38 | 22 |
| Rest of East Texas | 25 | 3 | 16 | .... | .... | 44 | 39 | 22 | +100.0 | 238,894 | 60 | 2 | 7 | 62 | 71 | 54 |
| North Texas | 124 | .... | 86 | 2 | 2 | 214 | 206 | 172 | + 24.4 | 602,998 | 149 | 6 | 26 | 155 | 203 | 140 |
| West Central Texas | .... | 1 | 21 | .... | .... | 22 | 43 | 23 | — 4.3 | 69,691 | 67 | 6 | 30 | 73 | 101 | 82 |
| West Texas | 115 | 2 | 19 | .... | 4 | 140 | 131 | 158 | — 11.4 | 650,420 | 336 | 21 | 25 | 357 | 360 | 477 |
| Texas Panhandle | 18 | 12 | 10 | .... | 4 | 44 | 30 | 58 | — 24.1 | 123,569 | 71 | 7 | 5 | 78 | 71 | 165 |
| Gulf Coast, Upper | 35 | .... | 27 | .... | .... | 62 | 65 | 57 | + 8.8 | 445,527 | 73 | 12 | 5 | 85 | 91 | 118 |
| Gulf Coast, Lower | 63 | 4 | 34 | .... | 1 | 102 | 88 | 89 | + 14.6 | 654,724 | 92 | 12 | 8 | 104 | 118 | 156 |
| Southwest Texas | 11 | 6 | 10 | .... | .... | 27 | 28 | 42 | — 35.7 | 80,900 | 35 | .... | .... | 35 | 27 | 61 |
| South Central Texas | 2 | .... | 6 | .... | .... | 8 | 7 | 5 | + 60.0 | 27,321 | 15 | 3 | 4 | 18 | 23 | 22 |
| Utah | .... | .... | .... | .... | .... | .... | .... | .... | ..... | ..... | 3 | 1 | 1 | 4 | 5 | .... |
| West Virginia | 8 | 31 | 15 | .... | 1 | 55 | 68 | 60 | — 8.3 | 144,269 | 277 | 46 | 69 | 323 | 266 | 84 |
| Wyoming | 9 | 1 | 2 | .... | .... | 12 | 14 | 9 | + 33.3 | 51,542 | 56 | 11 | 24 | 67 | 89 | 79 |
| Total United States | 1,305 | 215 | 653 | 148 | 37 | 2,358 | 2,081 | 2,095 | + 12.6 | 8,407,994 | 3,350 | 417 | 570 | 3,767 | 4,043 | 3,835 |

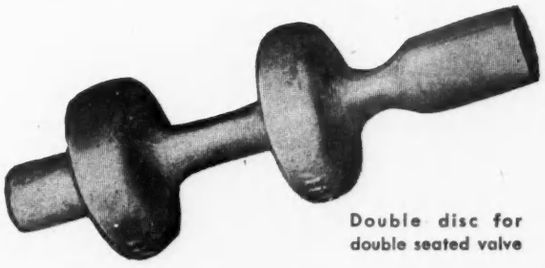
* Includes distillate wells. [1] Wells completed in 5 weeks, or 35 days, ended February 2, 1946. [2] Wells completed in 4 weeks, or 28 days, ended December 29, 1945. [3] Wells completed in 5 weeks, or 35 days, ended February 3, 1945. [4] Water input, gas injection, and salt water disposal wells.

# Cover Broad Range of Valve Trim Hardness Requirements with Lebanon Ⓛ 12... Ⓛ 13



Wedges for gate valves

THROUGH heat treatment for differential hardness, Lebanon Circle Ⓛ 12 and Circle Ⓛ 13 can be adapted to a broad range of valve trim casting requirements. Brinell Hardness obtained can be varied from 250 to 375 with Circle Ⓛ 12; from 450 to 500 with Circle Ⓛ 13. Heat treatment may be performed by either the foundry or user.



Double disc for double seated valve

In addition to providing desired hardness and other necessary physical characteristics, Circle Ⓛ 12 and Circle Ⓛ 13 also satisfactorily resist many corrosive substances. Used in valves which necessarily embody a sliding action between disc and seat, they provide freedom from galling and seizing. Wire drawing effect is minimized in valves subject to high temperature or high pressures, or both, and operated in "slightly opened" or "just cracked" position.

Seats for globe valves

An informative bulletin on Circle Ⓛ 12 and Circle Ⓛ 13 is available to interested valve trim users. To solve specific problems, arrange for consultation with a Lebanon metallurgist or foundry engineer.

## LEBANON CIRCLE Ⓛ VALVE TRIM ALLOYS

NOMINAL PHYSICAL PROPERTIES

| LEBANON DESIGNATION | Tensile Strength | Yield Point | Elongation In 2"-% | Reduction of Area-% | Brinell Hardness | HEAT TREATMENT |
|---|---|---|---|---|---|---|
| Ⓛ 12 | 110,000 | 85,000 | 24 | 55 | 220 | Annealed |
| | 180,000 | 154,000 | 7 | 11.5 | 375 | Heat Treated |
| Ⓛ 13 | 200,000 | 150,000 | 5 | 7 | 450-500 | Quenched and Tempered |

**LEBANON STEEL FOUNDRY • LEBANON, PA.**

*"In the Lebanon Valley"*

ORIGINAL AMERICAN LICENSEE GEORGE FISCHER (SWISS CHAMOTTE) METHOD

**Lebanon ALLOY AND STEEL Castings**

*More Than Stop-Gaps Needed—*

# Labor Legislation With Backbone!

By A. R. McTEE, Staff Writer

It begins to look as if Congress is cooling down considerably in its attitude toward anti-strike legislation. As strike settlements are announced, and some semblance of production is restored, legislation that promised to afford relief from future situations like the nation has just passed through, appears to have reached the cooling-off stage itself.

This is regrettable. The good news of strike settlements is certainly to be appreciated. At the same time, there is some kind of an intimation that the settlements lean to the phoney side. One cannot face the future with the feeling that the present arrangements are anything more than stopgaps; and that the next crisis will demand more of industry and the public than this one has haunts the thinking of many people.

James Tanhan, vice president, industrial and public relations, The Texas Company, speaking before the Rotary Club in Newark, N. J. last week, sounded a warning which ought to be echoed and re-echoed throughout the land, and into the ears of congressmen. He stressed the need for long-range corrective action based upon "equality under law . . . and responsibility for contracts," in dealing with the current labor problems. We are now paying the penalty "for this country's years of accumulation of blunders in the handling of labor relations," he declared. He further emphasized that fact-finding, as proposed, and which still seems to stick close to the minds of lawmakers in Washington, "does not go to the roots of our labor troubles, and raises little hope as a cure-all for the labor ills of the country."

### More Than Sedative Needed

"If we are to be realistic in our approach to labor problems, we cannot brush aside the underlying conditions by suggesting only the sedative of 'fact-finding.' The settlement of present-day wage issues would not improve the more basic difficulties that underlie labor-management relationships in this country . . . We are suffering from the complete absence of that kind of a governmental labor policy which would enable the parties to promote the necessary bases for industrial harmony and for good human relations in industry."

We would change one word in Tanhan's statement and say that the present settlements do not improve the basic difficulty underlying labor-management relations, that basic difficulty being a government policy which is wholly dominated by unions and politics.

At least one United States senator feels that any real effective legislation is impossible to achieve at this time. Due to the control which the CIO-PAC exercises over the legislative and executive branches of the government, he thinks that New Deal legislation which has made the labor union racketeers supreme in our land, is here to stay until the personnel of Congress changes. "As Congress is presently composed," he says, "there is no hope of getting any legislation enacted that is really opposed by the Communistic element which appears to be in control of the situation.—This civil war on the industrial front is not inspired or even approved by those who toil. It is exclusively a Communistic plot being carried out by a few labor leader racketeers who use our honest working people as pawns in their game to overthrow our American form of government."

We are not in position to justify the Senator's conclusions. We do not pass judgment on them. The fact that he, a member of our most highly conservative and august branch of government, the Senate, comes to the conclusion he states, is in itself a just cause for alarm.

### Case For Arbitration

Tanhan deplores the tendency in all legislation thus far submitted untimately to get back to compulsory arbitration. Touching on fact-finding as it promotes compulsory arbitration by arbitrarily aligning the force of public opinion against management, he observed that "If such boards are to make recommendations which, under the pressure of public opinion, business men are constrained to follow, must not government then assume the collateral responsibility to fix prices, control markets, to bring about the conditions that will permit the payment of the wages so determined? We need not pursue this line of reasoning very far to find ourselves in a completely government-controlled economy. There would be no incentive to be competitive. There could be no reward for business risk. Research and invention would be discouraged. *Labor unions would not exist because they would have no part to play.*"

The assurance of an avenue of recourse to a governmental body is a fatal handicap to genuine collective bargaining, in Tanhan's opinion. "The practice of 'smearing the employer' is not conducive to better understanding between employers and employes."

"Another fact," he goes on, "that needs facing is the apparent impossibility of reconciling the efforts of people who wish to avoid strikes with the unwillingness of unions to concede for any consideration any restriction or limitation upon the right to strike . . . A fourth fact that needs recognition is that collective bargaining, to mean anything, must produce an enforceable contract which in turn means that an employer must have legal redress for its violation. When we talk about fact-finding, we are not talking about the rules of the game. Actually, we are talking about a remedy for situations that arise because of the absence of good basic rules to govern the conduct of the parties."

### Equality and Responsibility

Two basic points of labor legislation were suggested:

1. "Equality under the law. Spell it out in detail, wherever the principle fits. Apply the test to our anti-trust laws, to the Wagner Act, to licensing, tax and other regulatory laws, or to laws governing suits for violation of contract. When the test is applied, the needed remedy is apparent. Equality under the law is an American guarantee of fair play as essential in industrial relations as in any other avenue of American life."

2. "Responsibility for contracts. Without enforceable responsibility contracts are valueless. Perhaps this means incorporation of unions, publication of by-laws, or it may mean legal penalties for conspiracy to violate or to induce a violation of a contract. Mutuality and enforceability of contracts are required as a basis for better industrial relations. Responsibility for both parties for their contracts must exist.

Against the argument that no legislation should be passed hurriedly, Tanhan points out that "If the last 10 to 12-year period demonstrates anything in this field, it demonstrates that recurring crises have not encouraged any deliberate effort to anticipate and avoid the next crisis.Apparently we act only when the turmoil is most compelling."

"It looks very much as if the American people have just about reached that point. Even though action may be taken under pressure it can be effective. The two principles of equality and responsibility built into our labor law would mark an important milestone on the path to labor peace . . . "

It is impossible to calculate the setback to reconversion wrought by the comparatively short period of strikes that we are passing through. The great damage done is obvious. The money lost to strikers themselves reaches into the hundreds of millions of dollars. On all sides one can see evidences of the general effect on industry.

To settle back into a comfortable attitude and do nothing to forestall another like period is inexcusable. Legislation with a backbone is necessary and should be demanded. Such legislation will avoid another crisis and will serve the common good of all Americans including "those we sometimes distinguish as labor and as management."

## AIME Technology Abstracts

■ CONTINUED FROM PAGE 16

be made with bottom hole flowing or static, or some intermediate point.

The cumulative retrograde test data can be computed readily to a rate basis which shows that the change from retrograde to normal vaporization is more abrupt, occurs at a lower value and at a higher pressure than indicated by the usual cumulative curve. The rate curve also indicates that at low pressures the GPM may become higher than the original content. Both laboratory and field data indicate the possibility that the rate the curve may perhaps fundamentally follow logarithmic functions in both the normal and retrograde region.

Should further information prove that retrograde condensation follows a definite mathematical equation that is graphically expressed as a straight line on logarithmic paper, it will provide a useful tool for field and laboratory use.

Most of the available retrograde curves were convex, but a few had a concavity on the retrograde log. It was suspected that the correct type is the convex curve and that the concave type may be due to securing a sample during a transition period which did not represent equilibruim conditions within the reservoir.

Attempts to check laboratory retrograde losses by field data proved unsatisfactory and inconclusive because of the inaccuracy of field data and because the two sets of data were for condensates of different composition. However, there is enough evidence to throw some doubt upon the assumption that laboratory methods are fully analogous to reservoir conditions. To reach valid conclusions with respect to the applicability of laboratory to actual conditions, it will be necessary to have more accurate data from more fields and the laboratory data will have to be represented in comparable terms.

### Performance of Bottom Water Drives

By MORRIS MUSKAT, Chief, Physics Division, Gulf Research and Development Company.

This paper dealt with movements of fluid to the producing oil well in fields having strictly bottom-water drive, as distinct from reservoirs in which there is edge-water drive or gas drive. In the latter type reservoir, conditions at the bottom of a well undergo changes as the field's development proceeds. But in bottom water drive fields, individual wells are underlain by water, and the performance of such wells under different fundamental conditions is discussed.

In the East Texas field, as an example, about half of the reservoir originally was underlain by water. Wells on the west side of the field, accordingly, are subject to bottom-water drive. But the field as a whole is subject to edge-water drive.

In wells with edge-water drive, the oil moves laterally to the well, and there may be coning of the water up into the oil section. But in wells subject to bottom-water drive, the oil moves primarily upward and then toward the well, being replaced by the bottom water thereupon moving upward. In this case also there is some local coning of the water upward toward the well as oil is produced, but this would tend to cease through the force of gravity with the movement of the fluid toward the well stopped.

Movement of the fluid to the well in the case of a reservoir with bottom-water drive is affected by three main conditions: 1, well spacing, or the distance between different wells; 2, well penetration, or the thickness of pay penetrated in the well, and 3, radius of the well. Other factors which affect the movement of the fluid to the well, and which have an influence upon such conditions as coning, include especially the ratio of permeability of the formation horizontally to the permeability vertically. Thus if vertical permeability is low, the fluid cannot rise rapidly.

In recognition of these primary factors, charts indicated the behavior of bottom-water drive wells under varying conditions. Some of these charts showed what percentage of the reserves credited to the well might be expected to be produced as water-free oil under different conditions of well spacing, penetration of the pay, and varying permeability.

It was stressed that there are extreme contrasts between horizontal and vertical permeability, which materially affect the movement of the fluid to the well. These contrasts may not be fully recognized generally, but can be well understood in view of the fact that there are frequently some thin streaks of shale within sand sections to retard the vertical movement of the fluid.

### Some Experiments on the Mobility of Interstitial Water

By R. G. RUSSEL, F. MORGAN, M. MUSKAT, Gulf Research & Development Company.

Experiments using radio-active tracers have been made to study the mobility of interstitial waters in sandstone cores when subjected to extraneous water injections. The experiments included cores in which the interstitial water represented the connate water content in oil-bearing sand, either under virgin or depleted conditions.

Tests also were made on cores fully saturated with water. In all cases 70 to 90 percent of the initial interstitial water content was displaced after an inflow of extraneous water equal to a single pore volume of the core. The implication of these results with respect to core analysis, water flooding and electric logging were discussed.

### Gravel Packing of Oil Wells

By THOMAS S. WEST, geologist and engineer, Blanco Oil Company and AL BUCHANAN, San Antonio, Texas.

This paper represented a study of the effectiveness of the various methods of oil well completion when applied to sand sections containing gas and oil, oil and water, or all three, in which the oil column is relatively thin. A thin oil column was roughly defined as one less than 10 feet thick. It was pointed out that the study also was applicable to completion practices in wells having relatively thick oil column, since all sand and most lime reservoirs with gas or water drive ultimately afford only a thin oil column at any given location as depletion progresses.

A study was made of the probable mechanism by which high gas/oil ratio or high oil/water ratio develops in both wells which initially have relatively thin oil column, and wells which later develop a thin oil column as a result of depletion.

Because of the difficulty in securing accurate data as to gas-oil and oil-water contacts in partially depleted wells, field data presented were confined to wells having initially thin oil columns.

Completion and production data presented for three wells in the Oakville area of Live Oak County, Texas, which were completed near the gas-oil or water-oil contact indicate that coning may not be as prevalent a cause of failure in such cases as commonly assumed.

Failure to exclude water or gas in the cases discussed was indicated to be due instead to one or more of three conditions, as follows:

1. Failure at the contact of the formation and the cementing material, such as flowing out of the filter cake.

2. Failure of the formation, such as the formation of a cavity or channel as a result of sand production or the washing out of a shale section by an initially small leakage path. This latter case may be frequently observed on drill stem tests in open hole, particularly with the packer seated in shale. An apparent complete shut-off may be obtained for several minutes, followed by a rapidly increasing leakage past the packer as indicated by sinking of the mud level.

3. Failure of the cementing material.

For preventing failures from these

## Anthony Lucas Award Presented to J. O. Lewis

The Anthony F. Lucas Medal, annual award of the Petroleum Division of the American Institute of Mining and Metallurgical Engineers, was presented to James O. Lewis, consulting geologist and engineer of Houston, at the Institute annual banquet on February 27.

James O. Lewis

The citation said "for his pioneer work in laying the foundations of petroleum engineering through early recognition and lucid exposition of the energy relationships in petroleum reservoirs; for his vision and leadership in developing secondary-recovery methods and his large influence in the general improvement of petroleum production practices."

The Lucas Medal is awarded to recognize distinguished achievement in improving the technique and practice of finding and producing petroleum. It was established in 1936. Previous awards were made to: J. Edgar Pew, 1937; Henry Latham Doherty, 1938; no award, 1939; E. DeGolyer, 1940; Conrad (posthumously) and Marcel Schlumberger, 1941; no award, 1942; John R. Suman, 1943; Charles V. Millikan, 1944; no award, 1945.

Lewis was born in San Jose, Calif., and was graduated from Leland Stanford University, majoring in geology. From his graduation until 1915 he was employed as a geologist for a number of petroleum companies in California and then became supervisor of drilling operations on Indian lands for the Bureau of Mines. From 1919-20 he was chief petroleum geologist of the Bureau of Mines and since 1920 has been in private practice.

causes, particularly the first two mentioned, a method of completion has been evolved which employs gravel packing to prevent movement of all solid material in the space in which the completion is made.

Various combinations of layers of gravel, sand, and cement are utilized for this purpose. The use of fluids having fine solids in suspension and contained in the pores of a coarse gravel layer is also sometimes utilized for sealing by forming an impermeable filter cake on an adjacent sand layer. A plug which tends to be automatically self-sealing is thereby secured, whereas any leakage past plugs of cementing materials tends to become progressively greater.

Gravel, sand, etc., is placed by means of a dump bailer. Experimental results and theoretical discussion as to the applicability of gravel pack completion was included. The results of the application of the described completion procedure to seven Jackson sand wells in South Texas were also discussed.

**Reduction of Sulphates in Oil-Field Waters**

By F. B. PLUMMER and I. W. WALLING, Bureau of Economic Geology, University of Texas.

Bastin demonstrated that bacteria living in oil-field water had the ability to produce hydrogen sulphide, an obnoxious gas, from harmless sulphates in the water.

Recently it has been demonstrated that the black deposits in the bottom of oil tanks, in waste pits, and in pipe lines which cause erosion of tanks and clogging of filters in water disposal systems are due to these same bacteria. If the bacteria are killed no hydrogen sulphide and no black precipitates occur. If the bacteria are encouraged by giving them healthy conditions for growth, the obnoxious odors and harmful precipitates and excessive corrosion of pipes and tanks increase enormously.

Investigations disclosed that the bacteria grow best and develop fastest at about 120° F. They develop very little below 60° or above 140° F. They are killed by boiling water, formaldehyde, phenol, trichlorobutane, cresote, and most bacteriacides. They are not, however, killed by addition of alcohol or chlorine to the water in which they live.

Their growth is accelerated by the presence of metals such as iron, magnesium and aluminum, by presence of iron sulphide and by rust. They are greatly inhibited, if not killed, by the presence of much oxygen, iron oxide, sulphur, sulphosyanides, and rubber containing sulphur.

Therefore, their presence and nefarious habits in oil-field water can be prevented or at least greatly retarded by adding effective bacteriacides to the water in stagnant or retarded places in water flow systems, by cooling the water below 70° F., by aerating the water, and by lining and covering tanks and metal parts with rubber coatings and rubber paints, and keeping all iron and metalic parts out of the water as much as possible. Thus the killing of microscopic life prevents odors, rusting, and obnoxious black sludges in oil tanks.

**Possibilities and Problems of Drilling Beyond the Continental Shelves**

By HENRY EMMETT GROSS

Geophysical surveys have been made 27 miles offshore. About 600 feet defines the limits of the continental shelves. These continental shelves have been variable, the outer section of which have been the collection places of the continental erosion products, and it is there that thick sections of sedimentary rock would be expected.

The great geosynclinal areas most favorable for oil are those around the Gulf of Mexico, the Isthmus of Tehuantepac, and the Malayan Archipelago.

Drilling in the open water offers few advantages over drilling on land: 1, Ocean transportation is available to deep water drilling sites; 2, refining facilities and markets, perhaps, are established on the nearby shore; 3, freedom from jungle pests and tropical diseases; 4, competitive drilling is less likely to be encountered and 5, attractive areas are not yet under lease.

**Disadvantages Cited**

The disadvantages are great and numerous: 1, Storm hazards from wind and waves; 2, expensive foundations, both rigid and floating; 3, shutdown times due to bad weather; 4, marine legal regulations; 5, difficulty in moving men and materials to the drilling site, and 6, need of extra precautions for safety.

For drilling in water 500 or 600 feet or more deep, floating foundations must be used, and for these: 1, The derrick floor and well head must be in open air; 2, conductor pipe, casing and drill pipe must be under constant tension and not undulating; 3, derrick floor and drilling platform must maintain a constant level; 4, the foundation must be of the open type in that part which is subject to wind and waves; 5, the drilling platforms must remain in a fixed position; 6, the foundation must handle all loads amply and provide ample storage space for rotary mud, etc.; 7, metacenter conditions must be such that the floating foundations cannot overturn, and 8, anchors must not drag.

There are likely oil deposits under water one mile or more deep. Even though drilling may not now open commercially exploitable petroleum deposits, everything should be learned of the nature of the lithosphere beneath the deep hydrosphere.

# Both Import and Export Oil Shipments Are Expected to Exceed Prewar Volume

Tanker derequisitioning is virtually completed and shortly after March 1 the petroleum industry will have received all of its carriers back from the government. With the dissolution of the United Maritime Authority (the wartime Allied shipping pool) on March 2, certain water transportation problems were due to be highlighted, especially those centering around the immediate excess of tonnage over present needs.

American tanker tonnage now is about 60 percent of the world total, its phenomenal rise between 1939 and 1945 creating a unique problem in shipping surplus. The surplus, too, is not one of old or slow ships, but of modern fast carriers. Industry experts compute American tanker tonnage in 1939 as the equivalent of 185.3 of the new type T-2 boats, representing at that time about 24 percent of world tanker tonnage. The present fleet, which is four times greater than that of 1939, is the equivalent of 756 T-2 boats.

Sweden and Russia are the only other countries which now have a larger tanker fleet than they did at the beginning of the war. This disparity can result in one of two alternative corrective measures: purchase of American boats by foreign operators, or foreign construction of tankers.

The petroleum industry generally is in favor of the first course, and regards the pending Ships Sales Act of 1946 as extremely important. House and Senate conferees have virtually agreed on its terms, under which tankers may be sold at an amount equal to 87½ percent of the pre-war domestic cost. American citizens will have first chance on any of the boats up for sale.

**Heavy Movement Seen**

American postwar petroleum shipments, both export and import, are expected to run considerably in excess of prewar volume. Many industry economists predict petroleum crude imports will reach the million barrel a day level in the next decade, and rehabilitation and industrialization abroad will require greatly increased supplies of oil for both Europe and Asia. In all of these movements the American tanker fleet will play a dominant role.

But as foreign operators (and in effect, that means foreign states) build up their tanker fleets, competition in this picture may be expected. In 1938 American tankers carried only 14 percent of our petroleum exports, but they carried 53 percent of our imports. The Harvard Report on "The Use and Disposition of Ships and Shipyards at the End of World War II" holds that U. S. tankers should continue to carry most of our oil imports. The bulk of these imports will be from the Caribbean area and narrowing wage differentials in the maritime unions will intensify the competition. However, low original construction costs of foreign boats are likely to bt equalized, since most foreign operators will buy their carriers from us.

The Harvard report bases its argument on an estimated 20 million ton annual tanker import movement, a figure which is double that of 1938. The report predicts an export reduction of 35 to 40 percent.

**Estimates Fleet**

On the basis of the Harvard report, John W. Bancker, vice-persident of American Merchant Marine Institute, says: "Assuming that most of the imports will come from the Caribbean area, this would mean the employment of from 45 to 50 of the T-2 type tankers of all flags. Since most tanker routes are not those which can provide both import and export cargoes, another 30 to 45 ships will be necessary for America's export trade. Of this grand total of from 75 to 95 tankers, some 30 U. S. vessels may serve our import requirements with five to 10 carrying exports, a total of 35 to 40 tankers in foreign trade."

# "RATIGAN"

## No. 204 & No. 205

*open type*

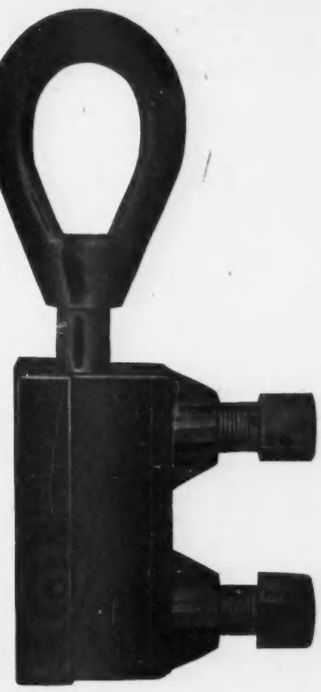
## POLISH ROD GRIPS

Ratigan No. 204 and No. 205 are our latest improved types of polish Rod Grips, designed to accommodate present types of unitized pumping equipment, which requires a short and narrow gripping device of high capacity.

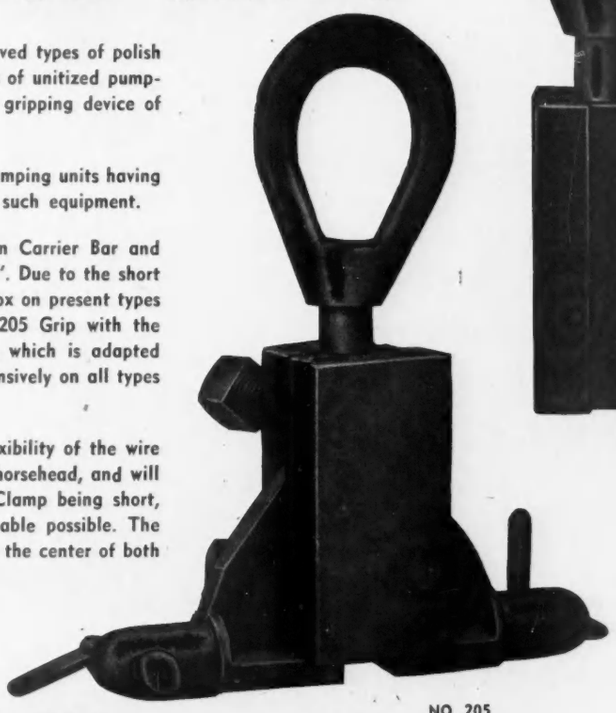
The No. 204 Grip will accommodate most of the pumping units having carrier bars, usually supplied by manufacturers of such equipment.

The No. 205 Grip was designed as a combination Carrier Bar and Grip, and will accommodate centers from 8" to 10". Due to the short distance between the horsehead and the stuffing box on present types of pumping units, we recommend using the No. 205 Grip with the Ratigan No. 181 Wire Line Clamp, shown below, which is adapted to the trunnions on this grip, and also is used extensively on all types of wire line horseheads.

The trunnions on the No. 205 Grip allow more flexibility of the wire line between the trunnions and the bottom of the horsehead, and will prolong the life of the cable. Also, the No. 181 Clamp being short, the operator obtains the full benefit of all the cable possible. The clamp eliminates babbitting, and keeps the lines in the center of both the grip and the polish rod, where they should be.



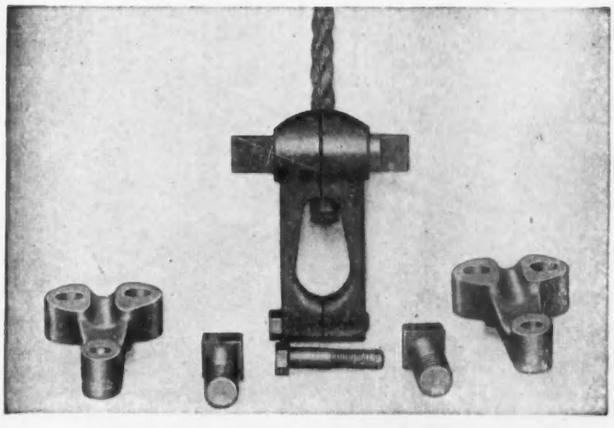
NO. 204



NO. 205

# 30% GREATER HOLDING CAPACITY

## Yet Smaller and Lighter in Weight



Ratigan No. 181 Screw Type Wire Line Clamp

Both the No. 204 and No. 205 Grips consist of three parts—the body, connecting block and the gate—and are identical in capacity and mechanism except that trunnions are added to the No. 205. The height of this grip is less than that of our No. 7, one of our popular screw type grips, and the body is approximately one half the width, while the weight is considerably less. A comparison of this grip with two of our former major screw type grips is given in the table below.

| TYPE | | APPROX. HOLDING CAP. | APPROX. WEIGHT | Price |
|---|---|---|---|---|
| No. 7 | 2 screw | 37,000 lbs. | 30 lbs. | $25.00 |
| No. 50 | 3 screw | 53,000 lbs. | 45 lbs. | 35.00 |
| No. 204 | 2 screw | 53,000 lbs. | 19 lbs. | 25.00 |
| No. 205 | 2 screw (Trunnion) | 53,000 lbs. | 28 lbs. | 35.00 |

**All Ratigan Products Are Illustrated and Described on Pages 2507 to 2526 of The 1943-44 Composite Catalog.**

# J. P. RATIGAN

**1213 Santa Fe Avenue** **Los Angeles 21, California**

**RATIGAN PRODUCTS ARE DISTRIBUTED THROUGH LEADING SUPPLY STORES**

## PRODUCTION HINTS

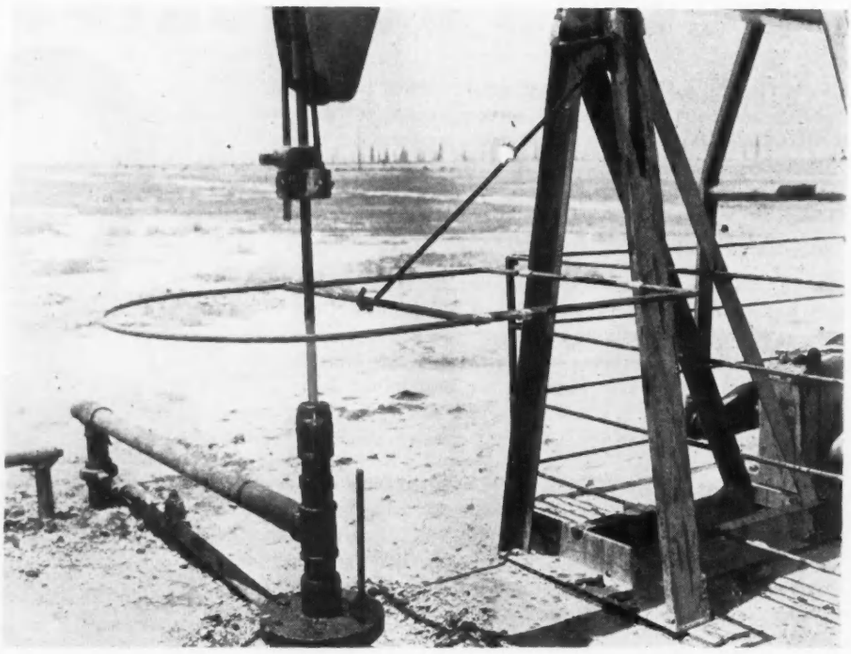
### Hinged Guard of Sucker Rod, Encircling Polish Rod, Prevents Contact with Unit

**PUMPING SAFETY**

The source of many accidents about the pumping well may be attributed to incorrect estimation of the extent of horsehead travel, or else from forgetting about its presence entirely. To eliminate this form of accident one company makes it a practice of installing on every unitized pumping well a light guard made of sucker-rod material. It is swung on two collars welded to the Sampson post and supported in a horizontal position by another rod looped through a hole cut in the A-frame above the supporting collars. The light framework encircles the polish rod as well as prevents travel underneath the horsehead.

The guard prevents approach of anyone closer than from one to two feet from the moving parts, yet does not impair essential movement of the pumper in servicing the well. When the well is to be pulled and reins are detached from the polish rod, the guard is easily swung back out of the way and lashed to the unit framework.

By painting the framework and the guard ring with alternate bands of black and either white or yellow, the relatively narrow band of steel is readily visible, and may be picked out at night by the beam from the switcher's electric lantern. Even if the guard is not readily visible when the unit is being inspected at night, the unit is strong enough to fend off a man—or animal—and thus to prevent entry within the arc of swing traversed by the horsehead.



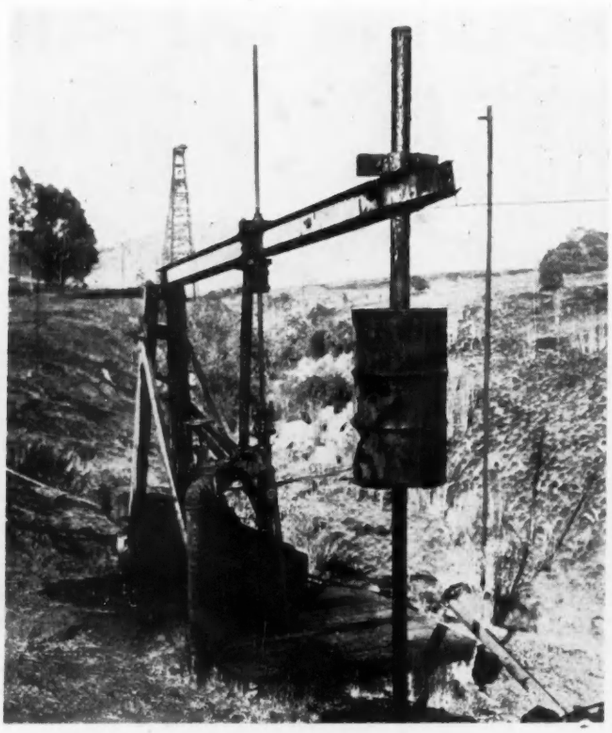
### Extended Beam Carries Counterweight to Balance Jack and Reduce Rod Load

**JACK BEAM BALANCING**

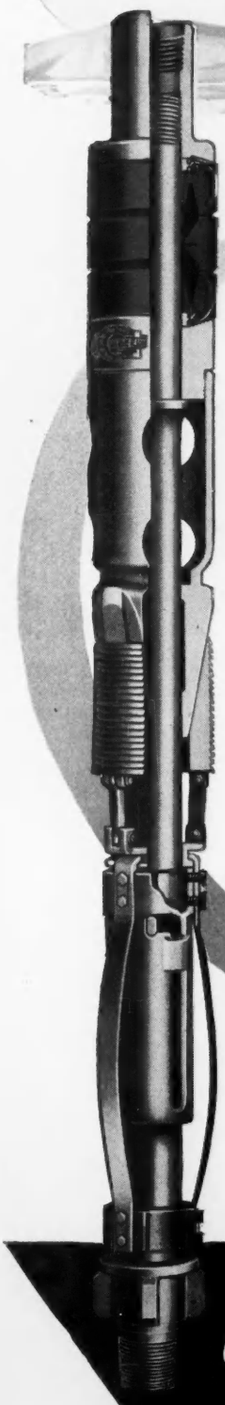
Counterbalancing individual wells using Oklahoma-type jacks usually consists of attaching suitable weights to the outer end of the walking beam, but in deeper wells where additional counterbalancing is required it is difficult to pile on enough weight to effect the desired balance. By lengthening the beam, however, and using a counterweight similar to that illustrated, the desired effect can be obtained with actually less weight involved, and without having to contend with excessive swaying or vibration as would normally be expected with a longer beam. Set vertically in concrete beneath the beam is a length of 2-inch pipe over which is telescoped a shorter length of 3-inch pipe, the latter being supported by a clamp resting atop the beam. Attached to the bottom of the 3-inch section is a concrete-filled oil drum which serves as counterweight. Occasional swabbing of the inner 2-inch pipe with grease sufficiently lubricates the telescoping members to give a smooth, practically frictionless motion.

Except for the slight movement of the clamp on the top side of the beam, there are no moving parts or bearings to give trouble or require close attendance. The smooth, non-swaying action of the smaller counterweight results in more efficient, trouble-free pumping of individual wells as well as in the operation of the central power plant.

Motion of the counterweight on its slide also serves as safeguard to prevent entry under the swing of the extended beam, and thus aids in promoting safety.



***$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas***



# Guiberson's
# H3R PACKER
## gives positive seal and certain recovery

Guiberson's H3R Packer sets and resets time after time without loss or damage to the packing rubber. The construction of the packing rings assures positive seal in the toughest well applications. Rings are of special oil-resisting composition . . . they cannot come off because steel bushings are molded into each ring. Spring steel reinforcing wires molded into both top and bottom rings give strength where it's needed, plus spring-back to prevent damage to rings when pulling or running-in.

Easy to set . . . easy to pull . . . Guiberson's H3R Packer has a heavy-duty mandrel with O.D. of upset diameter and with an I.D. of full tubing size throughout its length. Packer sets with minimum weight and holds against heaviest well pressures. Comes in 5½, 5¾, 6⅝ and 7-inch sizes with upset tubing mandrel; 5-inch size with 2-inch plain tubing mandrel.

Use Guiberson's H3R Packer as your production packer where the control head is not desired . . . packs off equally well against either low or high pressures . . . positive seal in the deepest wells . . . can be set and reset time after time without damage to the rings.

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See Composite Catalog Page 1907

An A.A.P.G. Publication!

TECTONIC MAP
of the
UNITED STATES
1944

Prepared under the Direction of the Committee on Tectonics, Division of Geology and Geography, National Research Council.
Chester R. Longwell, Chairman, Philip B. King, Vice-Chairman.
Charles H. Behre, Walter H. Bucher, Eugene Callaghan, D. F. Hewett, G. Marshall Kay, Eleanora B. Knopf, A. I. Levorsen, T. S. Lovering, George R. Mansfield, Watson H. Monroe, J. T. Pardee, Ralph D. Reed, George W. Stose, W. T. Thom, Jr., A. C. Waters, Eldred D. Wilson, A. O. Woodford.
A NEW GEOLOGIC MAP OF THE UNITED STATES AND ADJACENT PARTS OF CANADA AND MEXICO
Geologic structure, as evidenced and interpreted by a combination of outcropping areas, bedrock, surface disturbance, and subsurface deformation, is indicated by colors, symbols, contours, and descriptive explanation. Igneous, metamorphic, and selected areas of sedimentary rock are mapped. Salt domes, crypto-Volcanic disturbances, and submarine contours are shown. The base map shows state boundaries, rivers, a pattern of cities, and 1-degree lines of latitude and longitude.
The scale is 1:2,500,000, or 1 inch equals 40 miles. Printed in 7 colors on 2 sheets, each about 40 x 50 inches. Full map size is about 80 x 50 inches.

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The American Association of Petroleum Geologists
Box 979, Tulsa 1, Oklahoma, U.S.A.



## Hopper Facilitates Feed of Rock Salt for Line Cleaning

Injection of salt crystals into flow lines to remove paraffin is simplified for one operator by use of a detachable hopper mounted on the downstream side of the Christmas-tree flow bean. Made of materials usually found on any oil-producing lease, the device is easily mounted on a well and is readily transferred to other wells as needed.

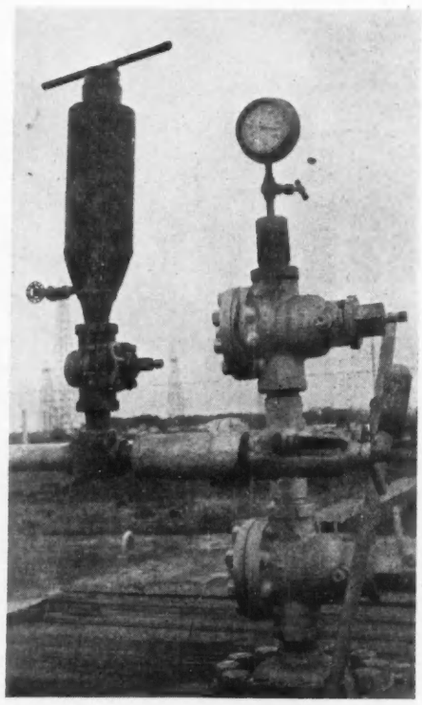
**PARAFFIN REMOVAL**

Body of the hopper consists of a cylinder made of 6-inch pipe 18 inches long. Lower end is swaged and welded to fit 2-inch connections, and a short ½-inch nipple welded near the bottom and having a controlling valve provides a bleeder to release gas accumulations which build up while operating.

Top of the cylinder is reduced to accommodate a 3-inch bull plug which is equipped with a handle made of a 15-inch long sucker rod welded across the top. A handle of this length provides sufficient leverage to permit tightening or removing the bull plug by hand.

Additional well equipment needed for this device consists only of a T-coupling placed on the flow line and a 2-inch valve mounted on the T. The valve remains closed except while hopper is in use. Proper location of the hopper in relation to the choke is effected by a 4-inch nipple inserted into the choke, a distance judged correct for optimum results.

After the hopper is erected in position, salt crystals are poured into the hopper cylinder, and the bull plug closed. The gate valve below the hopper is then opened and the crystals are free to enter the flow line at a point located near enough to the choke for the jetting action of the flow to be most effective, expediting movement of the salt from the hopper. Before refilling or removing the hopper, the main gate valve is closed and the bleeder valve opened to release gas pressure from the cylinder.



## Working Platform and Rail Speed Work-Over Jobs

On wells where it is desirable to allow the Christmas tree to remain intact, one operator fashioned a portable platform so that the crew could work unhampered above the tree. This arrangement also allows a blowout preventer to be installed below the slips so that the well is under control at all times. The platform is prefabricated from scraps of 2-inch and 1-inch pipe and sucker rod material, with planking to form the flooring. Angle iron is used around the top to retain the floor.

**CREW SAFETY**

Construction of the sucker rod bracing for the pipe legs is designed so that the entire assembly can be separated into two symmetrical parts for ready moving, by removing one ½-inch bolt from either side of the top. The sucker rod material which forms the rail around the top of the platform is in one piece and is removed by lifting the legs out of the top of the 2-inch pipe legs. A ladder on one side is made by welding sucker rod material for rungs into 1-inch pipe, the bottom of which is flush with the concrete floor so as to add to the stability of the assembly.

# *venture* IN HOLDING AND MAKING *friends*

During the last 13 months of the war The Oil Weekly published each month a Pony Edition for oil men in the services overseas. Some of these service men were subscribers, some prospective subscribers.

Our purpose was selfish, admittedly; it was to keep these men interested in the work from which they separated to enter the service and thus keep alive their friendly feeling toward The Oil Weekly; it was to build future circulation for The Oil Weekly by doing something worthwhile for those who were not subscribers.

Every month 6500 copies of the Pony Edition went overseas. A lot of copies never reached their destinations. Some went to the bottom of the seven seas. Some never caught up with the addressees. Some came back to us, casualties of war.

On their own initiative and without any urging on the part of the editors, 450 men wrote back thanking us for this thoughtfulness. Some of the letters were gems of unrestrained writing. The apparent labor with which many of them wrote marked them as men who weren't given to letter writing. *Yet 450 of them felt the urge to write.*

Now 450 responses from a list of 6500 readers is a good return in any country at any time. It is particularly good for a list that was "scattered from hell to breakfast" and concerned men in foxholes, tents, igloos, Quonset and Nissen huts and men aboard all kinds of craft at sea . . . *men deprived of the customary facilities for writing.*

Yet 7% of those men wrote to The Oil Weekly editors. To tie a response of this kind Readers' Digest, for example, would have to hear from 630,000 of its readers in a 13-month period. Possibly that good magazine does.

### *Results in Tangible Terms*

We like to feel that there is some connection between this venture in human relations and the fact that the December 31 ABC statement shows The Oil Weekly *reached an all-time high of 81.64% in renewals.*

We like to feel, too, that there is some connection between the Pony Edition and the fact that the foreign paid subscriptions to The Oil Weekly *have increased 45% since V-J day.*

During the year 1945 The Oil Weekly's *net paid circulation increased over 12%,* the greatest gains being made the last half of the year.

*All this circulation progress has been made without the use of a single premium to induce subscriptions or renewals.*

The Oil Weekly's editors feel that this circulation progress, this increasing reader interest are tangible tributes to expanded publishing service and to general improvements in product quality . . . such as traveling over 100,000 miles by air a year across international boundaries to get on-the-spot material first hand.

**The OIL WEEKLY**

# Crude Production Makes Slight Gain; Refinery Runs Moderately Reduced

Production of crude oil in the United States was increased slightly in the week ended February 23, while refinery runs were moderately reduced. The production of principal refinery products failed to meet market requirements, making heavy withdrawals from stocks necessary. Stocks of distillate fuel and residual fuel oil were drawn upon in the aggregate amount of 2,621,000 barrels, in the current heavy seasonal demands, and stocks of gasoline were lowered over 500,000 barrels, reflecting the elimination of War Emergency Pipe Line stocks of 1,415,000 barrels. These trends were revealed by the latest weekly report of The American Petroleum Institute.

U. S. crude production averaged 4,714,000 barrels per day in the week ended February 23, which was an increase of 4000 barrels a day over the previous week's average, and a decrease of 64,000 barrels or 1.3 percent from the comparable week of last year.

Crude runs to stills averaged 4,595,000 barrels daily, down 48,000 barrels from the average of the preceding week, and considerably less than production.

## Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

| ITEM | Crude Oil Prod. Barrels Daily | Crude Oil Prod. Week Ended | Runs to Stills Barrels Daily | Runs to Stills Week Ended | Crude Stocks Barrels | Crude Stocks Week Ended | Gasoline Stocks Barrels | Gasoline Stocks Week Ended | Gasoil and Distillate Stocks Barrels | Gasoil and Distillate Stocks Week Ended | Residual Fuel Oil Stocks Barrels | Residual Fuel Oil Stocks Week Ended |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Highs:** | | | | | | | | | | | | |
| 1941 | 4,337 | 11–22 | 4,120 | 10–18 | 266,187 | 3–29 | 99,727 | 3–29 | [1]54,983 | 11–15 | 102,448 | 1– 4 |
| 1942 | 4,337 | 2– 7 | 3,961 | 1– 3 | 263,208 | 3–28 | [1]109,281 | 3–14 | 47,861 | 11–14 | 95,857 | 1– 8 |
| 1943 | 4,436 | 11–13 | 4,331 | 12– 4 | 245,752 | 5–29 | 94,159 | 3–20 | 47,187 | 11–27 | 72,881 | 1– 2 |
| 1944 | 4,762 | 9–30 | 4,798 | 12–30 | 240,992 | 1– 1 | 89,162 | 4– 1 | 48,162 | 10–28 | 64,744 | 10– 7 |
| 1945 | [1]4,944 | 7–14 | [1]5,140 | 8–18 | 227,554 | 10–13 | 99,012 | 3–24 | 45,341 | 11–17 | 56,074 | 1– 6 |
| 1946 | 4,714 | 2–23 | 4,651 | 1– 5 | 224,762 | 2–16 | 105,233 | 2–16 | 35,199 | 1– 5 | 42,371 | 1– 5 |
| **Lows:** | | | | | | | | | | | | |
| 1939 | [3]1,601 | 8–26 | 3,125 | 2–18 | [2]229,127 | 10–12 | 71,152 | 10– 7 | 20,722 | 4–15 | 105,397 | 4– 3 |
| 1941 | 3,364 | 1–11 | 3,490 | 1–18 | 240,399 | 11–15 | 79,923 | 10– 4 | 28,382 | 4–12 | 90,914 | 7–13 |
| 1942 | 3,297 | 7– 4 | 3,393 | 5–23 | 231,896 | 12–12 | 75,934 | 12– 5 | 29,240 | 4–25 | 72,962 | 12–26 |
| 1943 | 3,821 | 1– 9 | 3,579 | 3–18 | 232,191 | 1– 9 | 68,182 | 10–16 | 30,732 | 4– 3 | 57,596 | 12–25 |
| 1944 | 4,357 | 1– 1 | 4,228 | 2–12 | 220,258 | 9– 9 | 76,302 | 1– 1 | 30,232 | 4–19 | 49,737 | 3–18 |
| 1945 | 3,621 | 10– 6 | 3,409 | 10– 6 | [4]211,813 | 8–25 | 70,791 | 10–13 | 26,483 | 3–17 | 38,548 | 5–26 |
| 1946 | 4,548 | 1– 5 | 4,498 | 1–12 | 218,193 | 1– 5 | 98,494 | 1– 5 | 25,398 | 2–23 | 39,086 | 2– 2 |

TRENDS OF 1945 AND 1946

| Trends in Week Ended: | Crude Oil Production Daily | Crude Oil Runs to Stills Daily | Crude Oil Stocks Week End | Gasoline Production Weekly | Gasoline Stocks Week End | Gasoil and Distillate Production Weekly | Gasoil and Distillate Stocks Week End | Residual Fuel Production Weekly | Residual Fuel Stocks Week End |
|---|---|---|---|---|---|---|---|---|---|
| **1945:** | | | | | | | | | |
| January 27 | 4,727 | 4,756 | 221,310 | 14,957 | 88,223 | 4,843 | 33,561 | 9,252 | 51,119 |
| February 24 | 4,777 | 4,803 | 219,351 | 15,500 | 95,972 | 4,958 | 28,753 | 9,084 | 46,713 |
| March 31 | 4,781 | 4,677 | 223,782 | 14,644 | 98,758 | 4,548 | 26,889 | 9,184 | 41,745 |
| April 28 | 4,805 | 4,780 | 223,474 | 14,633 | 94,068 | 4,636 | 28,273 | 9,379 | 39,813 |
| May 26 | 4,887 | 4,950 | 222,831 | 15,194 | 89,121 | 4,667 | 29,184 | 9,670 | 38,548 |
| June 30 | 4,903 | 4,999 | 220,781 | 15,546 | 86,472 | 4,910 | 32,213 | 9,077 | 40,488 |
| July 28 | 4,930 | 4,996 | 218,507 | 16,106 | 86,008 | 4,598 | 36,071 | 9,586 | 42,283 |
| August 25 | 4,892 | 4,931 | [4]211,813 | 15,986 | 84,693 | 4,960 | 39,782 | 9,356 | 46,201 |
| September 29 | 4,357 | 3,812 | 222,387 | 11,913 | 79,552 | 3,940 | 43,689 | 7,047 | 46,863 |
| October 27 | 4,273 | 4,838 | 224,230 | 15,530 | 74,335 | 5,159 | 43,472 | 8,691 | 45,943 |
| November 24 | 4,469 | 4,648 | 219,363 | 15,681 | 83,184 | 4,802 | 45,258 | 8,800 | 47,474 |
| December 8 | 4,459 | 4,473 | 218,355 | 14,908 | 87,004 | 4,669 | 42,406 | 8,545 | 44,743 |
| December 15 | 4,515 | 4,562 | 219,518 | 14,644 | 89,043 | 4,905 | 40,968 | 8,107 | 42,962 |
| December 22 | 4,480 | 4,511 | 220,288 | 14,768 | 91,870 | 4,708 | 38,919 | 8,539 | 41,479 |
| December 29 | 4,474 | 4,729 | 218,918 | 14,546 | 95,205 | 5,055 | 36,651 | 8,765 | 42,447 |
| **1946:** | | | | | | | | | |
| January 5 | 4,548 | 4,651 | 218,193 | 14,488 | 98,494 | 5,293 | 35,199 | 8,867 | 42,371 |
| January 12 | 4,578 | 4,498 | 219,219 | 14,246 | 99,574 | 5,325 | 33,359 | 8,223 | 40,499 |
| January 19 | 4,606 | 4,627 | 219,709 | 13,979 | 100,778 | 5,295 | 31,403 | 8,563 | 40,557 |
| January 26 | 4,626 | 4,553 | 220,544 | 13,622 | 101,737 | 5,720 | 29,498 | 8,411 | 39,722 |
| February 2 | 4,609 | 4,530 | 224,351 | 13,841 | 103,125 | 5,636 | 28,939 | 8,506 | 39,086 |
| February 9 | 4,690 | 4,512 | 223,303 | 12,854 | 103,952 | 5,650 | 28,301 | 8,630 | 39,555 |
| February 16 | 4,710 | 4,643 | 224,762 | 14,002 | 105,233 | 5,776 | 27,273 | 8,813 | 40,036 |
| **February 23, 1946** | **4,714** | **4,595** | ..... | **13,175** | **104,709** | **5,728** | **25,398** | **7,913** | **39,290** |
| **February 24, 1945** | **4,778** | **4,846** | [5]220,060 | **15,785** | **96,448** | **5,152** | **27,672** | **9,253** | **46,711** |
| **Change:** | | | | | | | | | |
| In week | +4 | —48 | +1,459 | —827 | —524 | —48 | —1,875 | —900 | —746 |
| In year | —64 | —251 | +4,702 | —2,610 | +8,261 | —576 | —2,274 | —1,340 | —7,421 |
| In year | —1.3% | —5.2% | +2.1% | —16.5% | +8.6% | +11.2% | —8.2% | —14.5% | —15.9% |

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, February 17, 1945.

Stocks of refinable crude were reported by the U. S. Bureau of Mines to be 224,762,000 barrels, as of February 16. They were then almost 5 million barrels more than the 220,060,000 barrels reported February 17 last year.

Production of gasoline during the week ended February 23 was 13,175,000 barrels, including natural gasoline blended at refineries. This was a decrease of 827,000 barrels from production of the previous week, and down 2,610,000 barrels or 16.5 percent from that produced in the corresponding week of 1945.

Distillate fuel oil production was 5,728,000 barrels in the week ended February 23, down 48,000 from week before, but up 576,000 barrels, or 11.2 percent, from the same week a year ago. Stocks of this fuel were reduced at the rate of 268,000 barrels daily during the week, having declined to 25,398,000 barrels, lowest since 1940. That amount was 2,274,000 barrels or 8.2 percent lower than the 27,672,000 barrels on hand February 24, 1945.

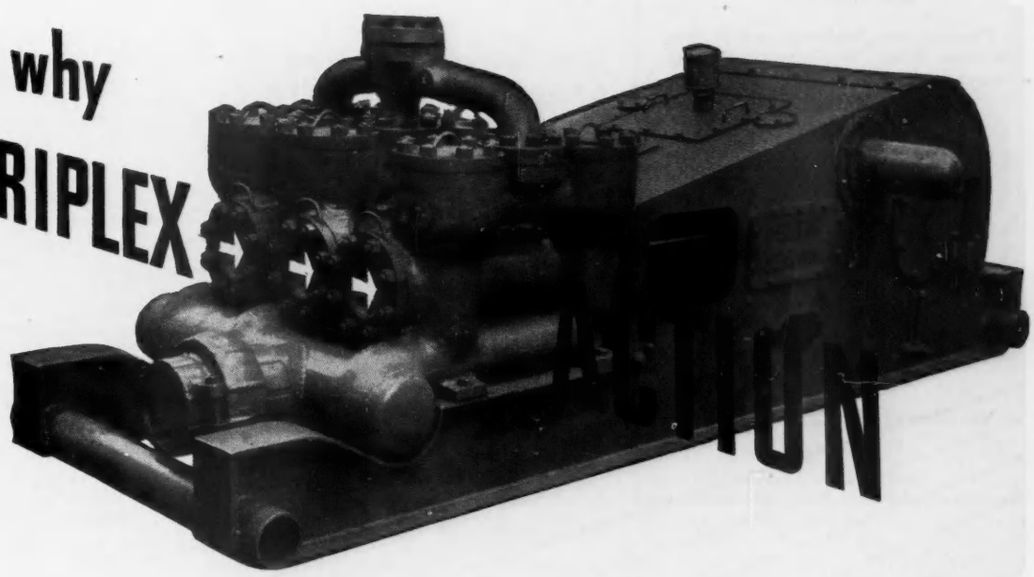
Residual fuel oil production amounted to 7,913,000 barrels during the week, down 900,000 barrels from the previous week, and 1,340,000 barrels, or 14.5 percent, lower than the comparable week of 1945. Stocks were used at a rate of about 106,000 barrels a day as they came down to 39,290,000 barrels. That total was 7,421,000 barrels, or 15.9 percent less than the 46,711,000 barrels held on February 24, last year.

## *Oklahoma March Allowable Cut 30,000 Barrels Daily*

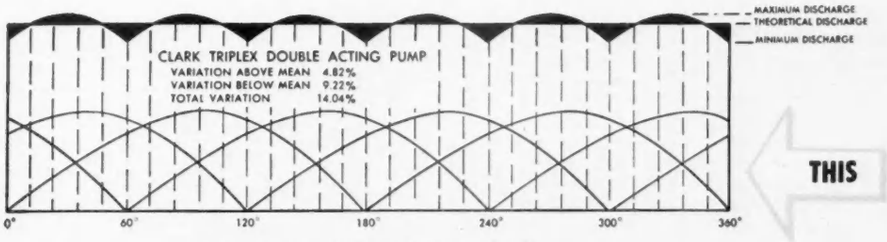
Oklahoma will produce 30,000 barrels per day less crude during March than in February following an allocation order issued by the Oklahoma Corporation Commission fixing the state's daily crude oil allowable for March at 359,525 barrels, the lowest figures for the past 12 months. The cut-back followed recommendations made by Walter T. Pound, chief conservation officer, and was in line with U. S. Bureau of Mines recommendations which indicated Oklahoma crude oil demand at 360,000 barrels per day for March. The reduction was not granted, however, without a challenge. Opposition to such a heavy cut-back was entered by legal representatives of almost all major oil companies in the state.

Allocated pools will be permitted to produce 164,525 barrels daily and unallocated pools 195,000 barrels per day. West Edmond, the state's largest pool, will bear the brunt of the lower production, the March allowable having been set at 79,000 barrels, a daily reduction of about 10,000 barrels or about 108 barrels per day per well. Other pools suffering fairly heavy cut-backs include Apache, Cement West Medrano, the Pauls Valley Bromide zone, South and West Moore, Cheyarha, Oklahoma City Wilcox zone, and the Osage.

# here's why CLARK TRIPLEX



## means LESS vibration . . . LONGER life




THIS

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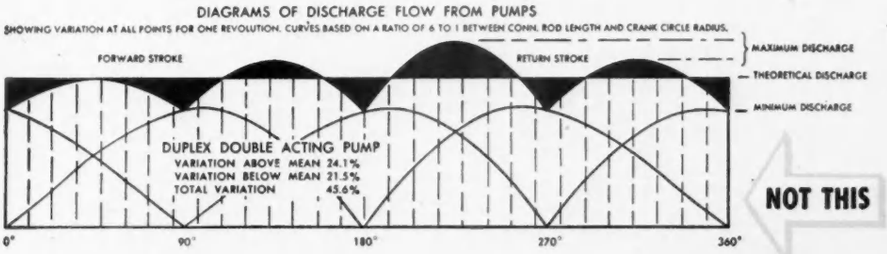


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## Gulf Delivers Ellenburger Crude to Magnolia System

Gulf Refining Company pipe line division has started deliveries on a spot sale of 300,000 barrels of Ellenburger crude from the Keystone field, Winkler County sector of West Texas, to Magnolia Petroleum Company. The oil is delivered into Magnolia's system at Midland.

Gulf has also made initial deliveries on a 200,000 barrel spot sale of crude from the Eunice-Monument field, Lea County sector of New Mexico, to Shell Oil Company. This oil enters Shell Pipe Line Corporation's system near Wink, Tex. The oil from both fields have a high lube stock yield.

## 52 Miles of Eight-Inch Line Laid for Great Lakes

Midwestern Engineers, Tulsa, have completed 52 miles of eight-inch gasoline line between Panola, Kans., and Kansas City, Mo., for the Great Lakes Pipe Line Company. Also completed are eight miles of four-inch natural gas lateral line near Genoa City, Wis., for the Wisconsin Gas Comapny, and five miles of 6, 8 and 12-inch natural gas mains at Blue Island, Ill., for the Public Service Company of Northern Illinois.

## Nine Employes Promoted by United Gas Corporation

N. C. McGowen, president of United Gas Corporation, announced advancement of nine long-time employes. L. V. Tracht, at one time statistician for a predecessor of United Gas in 1929 and for nine years assistant treasurer of the operating division, was elected treasurer. He will be succeeded by A. J. Biard.

R. E. Hull, former general auditor, was made comptroller, and will also serve in that capacity for United Gas Pipe Line, Union Producing and United Oil Pipe Line companies, subsidiaries of the corporation. F. E. Waltrip, assistant to Hull for several years, was named auditor for the corporation and its three subsidiaries. J. H. Miracle, secretary of the subsidiary and transmission companies, was elected secretary, retaining his former posts as well.

Other advancements: M. V. Cousins, director of personnel; D. R. Pflug, assistant chief engineer; H. W. Egger, superintendent of compressor stations; and H. W. Eiser, superintendent of transportation for all three subsidiary companies. These promotions have resulted from the transfer of J. C. Flanagan to the Houston offices and the recent death of S. L. Davis.

## FPC Consolidates and Sets Pipe Line Hearing Dates

Consolidation of applications and hearing dates in three cases were announced by FPC last week.

Requests of the Kentucky Natural Gas Corporation for authority to construct approximately 18 miles of 10¾-inch transmission line from Russellville, Ky., to Mitchellville, Tenn., and 30 miles of six-inch line from Panhandle Eastern Pipe Line Company's transmission line to a connection with the Indiana Gas and Water Company, Inc., at Martinsville, Ind., were consolidated and set for hearing in Washington March 11.

On the same date, in Chicago, the commission will open hearings on consolidated applications of the Northern Natural Gas Company for authority to make additional use of its facilities and to construct 82.8 miles of 24-inch loop line between its Sublette and Mullinville stations instead of a 20-inch line originally sought.

A hearing also was scheduled for March 18 in Washington on the applications of the East Ohio Gas Company and the Hope Natural Gas Company, the former seeking to build 95 miles of 18-inch line from its Pipe Creek station to Austintown Junction, O., and 49 miles of 20-inch line from Austintown Junction to Maple Heights, O., and the latter asking authority to make additions and improvements at several of its facilities and to construct approximately 143 miles of loop and additional pipe lines.

## Over-Age Tankers to Be Sold By Maritime Body

Eleven over-age tankers which have been laid up in the James River, Virginia; at Mobile, Ala., and in Suisun Bay, California, will be sold March 4 on the conditions that they be dismantled and scrapped.

The tankers include "Cities Service Fuel," 8700 deadweight tons, built in 1916; the "H. M. Fredrichsen," 8050 tons, built in 1914; the "Argon," 10,770 tons, built in 1920; the "Bessemer," 7788 tons, built in 1919; the "Point Breeze," 7692 tons, built in 1918; the "Ponca City," 10,909 tons, built in 1920; the "Sharon," 7788 tons, built in 1919; the "Tustem," 10,626 tons, built in 1921; the "William Penn," 13,614 tons, built in 1921; the "R. D. Leonard," 2730 tons, built in 1922, and the "R. J. Hanna," 10,630 tons, built in 1921.

## Wyoming, Montana Lines

Frannie Gas Company, Frannie, Wyo., has applied to the Federal Power Commission for permission to construct 8.15 miles of natural gas lines from the Polecat gas field in Park County, Wyo., and about 4.74 miles of three-inch to connect with the Yale Pipe Line Company pumping station near Warren, Mont.

## United Raises Pay

Higher base pay schedules and shorter work week for most employes of the Shreveport district of United Gas Pipe Line and Union Producing Companies were announced for March 1. The increase in base pay schedule is approximately 18 percent to all employes on an overtime basis. The prewar 40-hour week will replace the present 44-hour week for office workers and the 48-hour week for field employes.

## ☆ Oklahoma

### *Atlantic Appears to Have Strike in Washita County*

Atlantic opens new area in Washita County; wildcat north of Hoover logs several pay zones; Pure abandons test southeast of Keyes structure; Logan County discovery flows 554 barrels per day.

**Washita County:** What appears to be an important strike along the southern limb of the Anadarko Basin is shaping up at The Atlantic Refining Company's Hill 1, wildcat about a mile south of Rocky in NW NW NW 25-8n-18w, where 2 drill-stem tests in Pennsylvanian sands recovered an estimated 15 million cubic feet of gas per day on 20 and 45-minute tests. Company officials reported the gas dry but some distillate was recovered when drill stem was broken down. The heavy gas shows were logged at 6170-90 feet and at 6190-6231 feet. Cores cut in the intervals showed slight staining. Operators are drilling slowly. Geological interpretation of the area is difficult because of complex folding.

**Murray County:** About 2 miles north of Hoover, Helmerich & Payne, Inc., was preparing to test several pay zones logged at Sadler 1, SE NW NE 29-1n-1e. The wildcat had its first show of heavy oil at approximately 1970 feet from an unidentified sand believed to be in the Pennsylvanian series. Oil covered the pits while crews cleaned out the hole. Other oil shows were logged below the Simpson, topped at 2240 feet. Samples which showed stains and saturation were reported from 2849, 2856, 2866 and 2869 feet. Electrolog indicates these as well as zones higher up the hole will be tested. Hole was at 3143 feet, below contract depth with casing being run.

**Cimarron County:** The Pure Oil Company appears to have defined the southeastern edge of the big Keyes structure in the Oklahoma Panhandle as the company issued a plug order for McCoy 1-A, NW NW NW 2-4n-8ecm, at 4845 feet, total depth. The wildcat is about 6 miles southeast of Pure's Johnson 1, a discovery that was rated initially at approximately 550 barrels per day and 1½ miles southwest of the company's Rose 1, a gasser. It was 1 of 3 widely scattered tests designed to outline the big structure. The other 2 are Sparkman 1, NE NE NE 3-5n-8ecm, almost 4 miles northeast of the oil discovery, trying to regain circulation at 4921 feet, and Jermyn 1, SW SW SW 18-5-8ecm, 1½ miles south of the oil producer, drilling at 4875 feet. Pure has drilled 2 oil wells, 2 gas wells and 2 dry holes on the structure to date.

**Logan County:** After connecting with Sohio Petroleum Company's pipe line, Sinclair Prairie Oil Company et al's Teuscher 1, important new Wilcox sand discovery about 3 miles north of the Arcadia Northeast pool, put 554 barrels of clean oil into the line in the first 24-hour gauge. Production is from 5929-41 feet and the oil tests 37 gravity. Sinclair was waiting on dry roads to begin drilling at Sexauer 1, NW NW NE 3-14n-1w, on the Oklahoma County side of the pool.

**Garvin County:** Testing continues at Globe Oil & Refining Company's Gibson 1, pool opener about 3 miles southwest of Empire City in CSE NE 30-3n-2w, reports crediting the wildcat with a flow of 400 barrels of 42.8-gravity oil in 24 hours through casing perforations between 6533-39 feet in the Pennsylvanian series. Gas-oil ratio was 700/1. Total depth is 7753 feet with pipe set at 7530 feet. Simpson dense was topped at 7445 feet but the zone was tested without recovery.

**Atoka County:** Edward J. Kubat has opened a new gas area at Gudgel 1, SE NE NW 15-3s-9e, about 1½ miles west of Boggy Depot. The wildcat, which is shut in for connections, tested approximately 2½ million cubic feet of gas per day from the Oil Creek sand between 2800-2811 feet. The structure is expected to cover a comparatively small area.

**Creek County:** Skelly Oil Company has completed Hobart 1, NE SW SE 8-17n-10e, discovery well for a new area about 2½ miles west of Kellyville. Bottomed at 2990 feet and with pipe set on top of the Wilcox sand at 2969 feet, the well was given a nitro shot between 2974-86 feet, standardized and is now pumping about 60 barrels of oil per day.

## ☆ Kansas

### *Long Extension Looms for Barry Pool, Rooks County*

Extension looms for Barry pool; Butler County wildcat may link Weaver and Fox-Bush pools; Arbuckle comes in high in Stafford County test; Crowther pool gets south extension; Rooks County wildcat logs good shows in Arbuckle lime.

**Rooks County:** A long extension to the Barry pool was indicated at Bird and Boreing et al's Veverka 1, CSL SW SW 27-8s-19w, after good saturation and stains were reported in the Arbuckle lime topped at 3403 feet. The wildcat is 1½ miles northwest of the Barry pool and although the Arbuckle came in slightly lower than in the pool proper it is structurally high with an abandoned well drilled about a mile northwest. Operators were rigging up cable tools to drill in and test.

Six miles northwest of Webster, Republic Natural Gas Company's Cooper 1, SE SE SE 14-7s-20w, logged good saturation and porosity in Arbuckle lime between 3501-08 feet, total depth, and a test was under way. The wildcat is

## Wells Completed in the United States in Week Ended March 2, 1946

**Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.**

| State or District | FIELD COMPLETIONS: New Wells *Oil | Gas | †Input | Dry | Total | Old Wells Deepened | WILDCAT COMPLETIONS *Oil | Gas | Dry | Total | ALL COMPLETIONS: This Week | Last Week | Cumulative: This Year | Last Year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 3 |
| Arkansas | 3 | .... | .... | 2 | 5 | .... | .... | .... | 1 | 1 | 6 | 5 | 32 | 22 |
| California | 25 | .... | .... | .... | 25 | 3 | .... | .... | 6 | 6 | 34 | 48 | 308 | 335 |
| Colorado | 2 | .... | .... | .... | 2 | .... | .... | .... | 1 | 1 | 3 | .... | 17 | 7 |
| Florida | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 4 | 1 |
| Georgia | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Illinois | 28 | .... | 1 | 6 | 35 | .... | 1 | .... | 6 | 7 | 42 | 29 | 302 | 299 |
| Indiana | 7 | .... | .... | .... | 7 | .... | .... | .... | 2 | 2 | 9 | 6 | 51 | 48 |
| Iowa | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Kansas | 18 | 4 | .... | 2 | 24 | 1 | 1 | .... | 4 | 5 | 30 | 35 | 364 | 212 |
| Kentucky | 6 | 2 | .... | 1 | 9 | .... | .... | .... | 1 | 1 | 10 | 12 | 92 | 97 |
| Louisiana | 16 | 1 | .... | 1 | 18 | .... | 1 | .... | 4 | 5 | 23 | 29 | 206 | 160 |
| North Louisiana | 4 | 1 | .... | .... | 5 | .... | .... | .... | 2 | 2 | 7 | 15 | 105 | 56 |
| South Louisiana | 12 | .... | .... | 1 | 13 | .... | 1 | .... | 2 | 3 | 16 | 14 | 101 | 104 |
| Michigan | 4 | 2 | .... | 1 | 7 | .... | .... | 1 | 4 | 5 | 12 | 16 | 123 | 120 |
| Mississippi | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | 4 | 28 | 58 |
| Missouri | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 8 |
| Montana | 3 | .... | 1 | 3 | 7 | .... | .... | .... | .... | .... | 7 | .... | 44 | 32 |
| Nebraska | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| New Mexico | 3 | .... | .... | 1 | 4 | .... | .... | .... | 1 | 1 | 5 | 5 | 66 | 86 |
| New York | 15 | 1 | 10 | .... | 26 | .... | .... | .... | .... | .... | 26 | 26 | 204 | 125 |
| Ohio | 4 | 1 | .... | .... | 5 | .... | .... | .... | .... | .... | 5 | 7 | 99 | 121 |
| Oklahoma | 36 | 12 | .... | 8 | 56 | 3 | 1 | .... | 4 | 5 | 64 | 41 | 447 | 384 |
| Pennsylvania | 27 | 3 | 15 | .... | 45 | .... | .... | .... | .... | .... | 45 | 48 | 410 | 426 |
| Tennessee | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... |
| Texas | 89 | 12 | 1 | 18 | 120 | 3 | 4 | .... | 24 | 28 | 151 | 154 | 1,343 | 1,147 |
| E.Tex.Bor.Co.'s | .... | 4 | .... | .... | 4 | .... | .... | .... | .... | .... | 4 | .... | 30 | 9 |
| Rest of E. Texas | 5 | .... | .... | .... | 5 | .... | .... | .... | 2 | 2 | 7 | 8 | 79 | 35 |
| North Texas | 21 | .... | .... | 10 | 31 | 1 | 1 | .... | 9 | 10 | 42 | 46 | 368 | 275 |
| W. Central Tex. | 3 | 1 | .... | 2 | 6 | .... | 1 | .... | 2 | 3 | 9 | 10 | 108 | 57 |
| West Texas | 22 | .... | .... | 2 | 24 | .... | .... | .... | 5 | 5 | 29 | 38 | 278 | 311 |
| Tex. Panhandle | 5 | 5 | .... | .... | 10 | .... | .... | .... | .... | .... | 10 | 10 | 86 | 96 |
| G. Coast, Upper | 8 | .... | .... | 1 | 9 | .... | .... | .... | 1 | 1 | 10 | 13 | 126 | 108 |
| G. Coast, Lower | 17 | 1 | .... | 3 | 21 | 1 | 1 | .... | .... | 1 | 23 | 20 | 189 | 165 |
| Southwest Texas | 7 | 1 | 1 | .... | 9 | 1 | .... | .... | 2 | 2 | 12 | 7 | 61 | 81 |
| S. Central Texas | 1 | .... | .... | .... | 1 | .... | 1 | .... | 3 | 4 | 5 | 2 | 18 | 10 |
| West Virginia | 1 | 7 | .... | 3 | 11 | .... | .... | .... | .... | .... | 11 | 12 | 78 | 122 |
| Wyoming | 2 | .... | .... | 1 | 3 | .... | .... | .... | 1 | 1 | 4 | 1 | 25 | 28 |
| Total U. S. | 290 | 45 | 28 | 47 | 410 | 10 | 8 | 1 | 59 | 68 | 488 | 478 | 4,248 | 3,845 |

* Includes distillate wells. † Includes salt water disposal wells.

about 3 miles north of a dry hole which topped Arbuckle at 3395 feet.

**Butler County:** Nadel & Gussman of Tulsa may be linking the Weaver and Fox-Bush pools or opening a new area at Crowley 1, SW SW SE 11-28s-5e. The hole filled with oil from pays in the Bartlesville sand and Mississippi lime. Bartlesville was topped at 2692 feet and on test bailed ½ barrel of oil an hour from 2700-05 feet. Base of the Bartlesville and top of the Mississippi was at 2731 feet with sand showing oil stains from 2700-31 feet. Pay in the Mississippi was from 2736-38 feet, total depth, and on test bailed 1½ barrels of oil an hour. The hole was shot with 140 quarts from 2700-38 feet and crews were cleaning out for production test.

**Stafford County:** About 1½ miles northeast of the Richardson pool, R. H. Shield's Sheppard 1, SW SE 16-22s-11w, topped the Arbukle lime high at 3591 feet and reported good oil shows in cuttings from 3591 to 3603 feet. While the formation is lower than in the productive Richardson pool it is about 45 feet higher than it was encountered in a dry hole drilled in the NW NW NW Sect. 22. A stratigraphic trap pool is in prospect.

**McPherson County:** The Crowther pool has been given a ½-mile south extension at The Elbar Corporation's Clark 1, NE NE NE 34-17s-1w. On a 12-hour pumping test the outpost put 120 barrels of oil and 40 barrels of water into tanks from the Mississippi lime at 2726-45 feet. Location has been staked for Clark 1-B, NE SE NE Sect. 34.

### Missouri

A new pool for Missouri, the first since the play in the Forest City Basin which took place between 1939 and 1942, was indicated in Nodaway County about 20 miles east of the Tarkio field of Atchison County.

J. E. Palensky's Wallace 1, wildcat in SW NW NW 10-65n-36w, 8 miles northwest of Maryville, was reported with an oil showing between 2020 and 2025 feet, total depth. Electrolog survey corrected total depth back to 2015 feet and the oil showing in the last 3 feet of the hole. The survey also indicated the Mississippi lime encountered at 1847 feet with a showing in the shaley lime phase. Pipe has been ordered run for a test.

Todd & Luering's Benson 1, wildcat in SW SE SW 30-55n-29w, was waiting on casing at 440 feet. A derrick has been erected on the Pickering ranch near SW SW SE 29-46n-32w, southeast of Belton in Cass County but name of operator has not been ascertained.

## ☆ West Texas

### *Andrews Has Fifth Prolific Ellenburger Producing Area*

Andrews County registers fifth prolific Ellenburger oil area through third pay discovery in the Martin field; Dollar Hide field outpost shows sharp southeast dip; Levelland field extended 2¾ miles southeast with first flowing prodution; Wheeler 3-pay field due to expand to the northeast.

**Martin Field:** Humble Oil & Refining Company's J. E. Parker 2, C NW NW PSL 23, Block A-41 and ½ mile east of its Simpson (McKee) sand discovery at 8700-90 feet, flowed at a rate of 70 barrels of 42-gravity oil hourly when a drillstem test was made at 8836-60 feet. The well continued to flow when stem was pulled. Production is from the Ellenburger, topped at 8836 feet with elevation of 3310 feet, and correlates 179 feet high to Parker 1, which yielded 7900 feet of sulphur water from the dolomite at 9030-54 feet. The new-pay discovery will be deepened to near the water level before setting pipe for completion. The company holds lease on 7293 acres of the Parker ranch.

Sun Oil Company's Martin 2, ¼ mile west of its 6850-7036-foot Basal Clear Fork discovery and a north offset to the Simpson strike, was drilling lime at 7888 feet after passing up indicated production in the upper pay.

The Atlantic Refining Company's University 1-A, 1⅞ miles southeast of the Martin field's Simpson producer, was drilling at 7850 feet, having entered the Tubb at 6100 feet, or 13 feet high, but proved barren in the Clear Fork. This Company's University 1-D-11, 1-1/16 miles south by east of the Simpson producer, was drilling at 3940 feet. Both 160-acre leases require production by November 14.

**Hockley County:** Stanolind Oil & Gas Company's Veretto 1, 2¾ miles southeast of the Levelland 5-well pool, flowed 34 barrels of oil and 1 barrel of bottom sediment and water on 24-hour test through 24/64-inch, then flowed 25 barrels of oil and 1 barrel of bs&w on 20-hour test. This production is from broken pay at 4760-4842 feet in San Andres, topped at 3770 feet, or 8 feet low. The zone was acidized with 2500 gallons after plugging back from 4889 feet to 4853 feet.

**Winkler County:** Mid-Continent Petroleum Corporation's Wheeler 2, C NW SE Sect. 10 and on the northeast edge of the Wheeler field, entered the Ellenburger at 10,549 feet, or 31 feet high to the south offset, and the second highest for the field on this marker. Pipe has been set after drilling 188 feet of the pay. It is slated to be dually completed, having entered the Devonian at 8315 feet, or the highest structurally. Structural relief recorded by this outpost heralds further expansion of the producing area to the northeast. The field's discovery, spotted by Shell, occupies the apex of the Ellenburger structure as determined to date.

Sun's Wheeler 2, southwest edge, flowed 250 barrels of fluid, including 9 percent bs and acid water on 24-hour test through ½-inch choke after using 2000 gallons of acid through perforations at 8510-95 feet in Devonian, topped at 8410 feet. This is the lowest of the 6 Devonian producers. This outpost entered the Ellenburger at 10,592 feet, or 40 feet low, and has not tested the 15-foot pay section drilled to 10,607 feet. Pipe was set at 10,586 feet.

Texas Pacific Coal & Oil Company's Brown-Altman 1, Lease 4, pending Holt (Glorietta) lime discovery between the Weiner and Emperor Deep fields, tested water at 5060-70 and 4965-75 feet. Additional perforations will be made higher to determine if any lower pay is present before tapping the effective zone of saturation at 4766-98 feet. The Clear Fork was drilled to 6255 feet with negative results.

**Wildcat Failures:** Geo. P. Livermore, Inc.-Honolulu Oil Corporation's Krause-Humble 1, southwestern Floyd County prospect, quit at 7843 feet in granite, topped at 7834 feet, or 1144 feet low to a 6760-foot granite failure 3⅞ miles west by north and in Hale County. Gulf's White 1-E, Pecos County, recovered 2950 feet of sulphur water at 8149-8225 feet in Ellenburger, topped at 7923 feet. In Crane County, Sid W. Richardson's Dawson 1 was drilling at 7390 feet to establish the water table in the Ellenburger, topped at 7232 feet, or 548 feet low to nearest deep test. Dawson 1 correlates 1216 feet low on the Montoya and 1100 feet low on the McKee.

**Andrews County:** Humble's Cowden 1, C NE NW PSL 13, Block A-55, and 11/16 mile southeast of the Dollar Hide 2-well field, was drilling dry lime at 8190 feet, and considered too low structurally to produce from the Devonian. This outpost entered the San Angelo at 5710 feet, or 568 feet low to the discovery, and is 598 feet and 618 feet low, respectively, on the Clear Fork and Tubb markers. The west offset to the discovery, which logged only 202 feet of the Devonian chert pay, is 46 feet low. Production trend to the north and northeast is being explored by 2 tests, including an Ellenburger project.

Shell and The Texas Company's Ratliff-Bedford 2, southeast offset to the Bedford dually-completed pool discovery, was drilling at 9470 feet, having indicated production in the Devonian, topped at 8770 feet, or 23 feet high. This confirmation well made a better showing in the 7800-foot Basel Permian, but also recovered water.

Gulf Oil Corporation has farmed out its ¾ interest in the north 320 acres of PSL 14, Block A-35, involving semi-wildcat acreage in the west extension of the Means fields, to Westlund & Johnson, Inc., retaining deep rights and 3/32 over-ride for flowing production and 3/64 over-ride for pumping wells. The latter is to start a test within 30 days of title approval, and drill 8 wells if no failures occur.

Atlantic et al's University-Texu 1-A, C SE NE Sect. 9, Block 12, Andrews County wildcat failure in Ellenburger at 10,575-10,760 feet, will be cleaned out to try for production in Devonian, which was passed up without a decisive test since this zone was not considered a source of production when drilled.

## ☆ Central West Texas

### *Shackelford Wildcat Has Natural Ellenburger Flow*

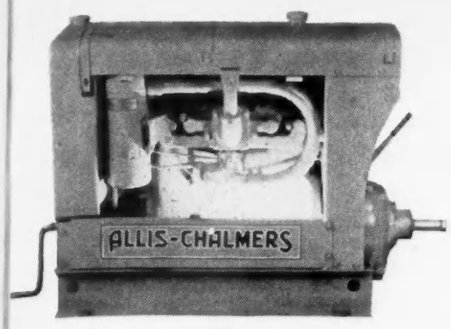
Shackelford County wildcat makes natural flow from Ellenburger, and another deep prospect shows for commercial pumper; Northwestern Jones County area widened.

**Shackelford County:** Phillips Petroleum Company's Ace Hickman-Pan 1, near NE SW NE Sect. 16, Lunatic Asylum Lands and 1½ miles west of Sedwick, flowed 27 barrels of pipe line oil hourly on last 3-hour gauge through ¼-inch choke. This production is from Ellenburger at 4210-20 feet, with elevation of 1355 feet.

Allied Oil Company's Sanders 1, east corner of TE&L Co. Sect. 583 and 4 miles northeast of Albany, improved its oil yield when deepened to 4540 feet in Ellenburger, topped at 4511 feet with elevation of 1355 feet. The well filled 3000 feet with oil after standing 16 hours and will be swabbed to try for natural flow. The company has a supporting block of 7000 acres.

Chas. H. Osmond et al's Green 1, C

# IT'S VERSATILE

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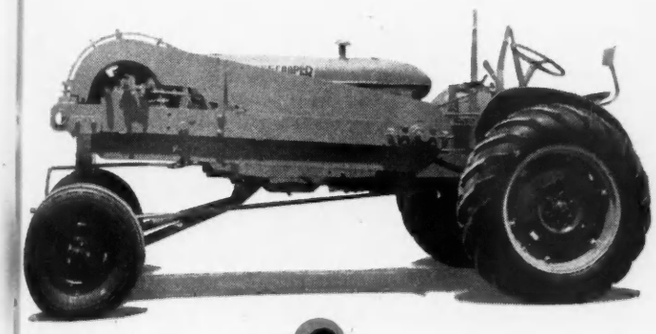

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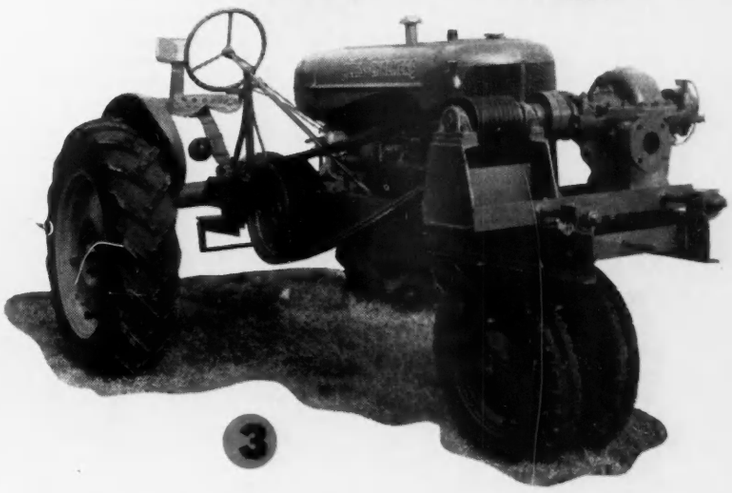
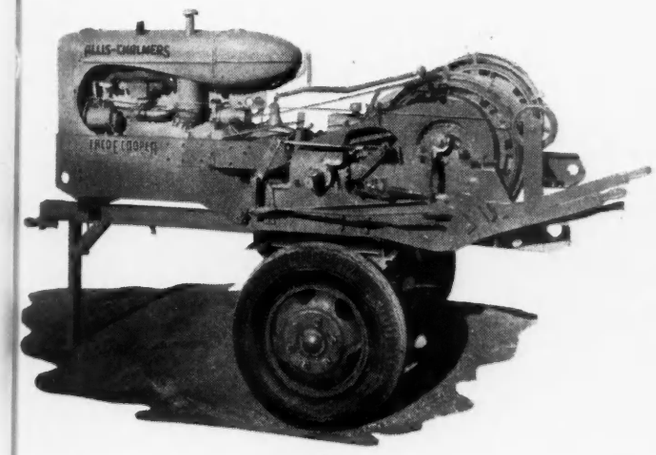


3

This streamlined, mobile well servicing unit is designed around the rugged ALLIS-CHALMERS Model W Engine and COOPER patented pulling equipment. It's adaptability, within its range is practically unlimited, as shown in the accompanying illustrations, each unit is a standard production model.

The maximum line pull of the W Unit is 20,666 lbs. The W Engine develops a torque of 128 ft. lbs., continuous operating range is 800—1300 r.p.m. All winch units are equipped with Cooper patented circulating air cooled brakes. Eight pulling speeds are available to 719 ft. p.m. at 1,600 engine r.p.m. Being standard production models, parts are interchangeable and repairs can always be made with factory built parts.

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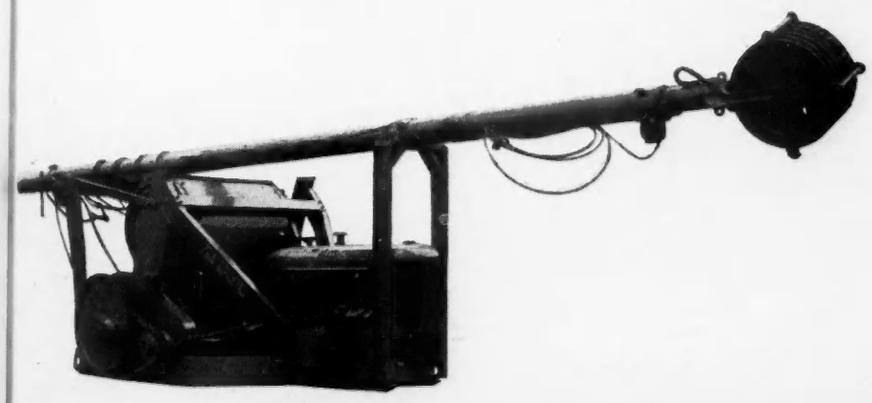
- **2. Allis-Chalmers W Single Drum Winch Tractor. Maximum line pull is 20,666 lbs. Unit has short turning radius, road clearance 20½". Road speed 15 m.p.h. maximum, four speeds forward and one reverse. Available with rotary drive and telescoping mast.**



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- **3. Allis-Chalmers W Tractor with Centrifugal Pump. A highly mobile auxiliary self-powered pumping unit, for pick-up and transfer operations. Also adapted to pipe line and refinery use.**

- **4. Allis-Chalmers W Trailer Winch, a complete pulling unit to be towed behind a light pick-up or small truck. Its specifications are the same as the tractor. Drum capacity 5,660' of ½" line. Drum is 26" x 33".**

- **5. Allis-Chalmers W Double Drum Skid Winch with single pole mast and jerk line spudding equipment. Maximum line pull is 20,666 lbs. Controls are conveniently located. Can be easily mounted on a small truck.**

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SW SW Sect. 29, semi-wildcat for the Ibex field, was moving in swabbing truck after drilling deeper to 4392 feet in green shale. Preliminary swabbing test yielded nominal show of oil and gas. This prospect entered the Ellenburger at 4360 feet, with elevation of 1318 feet, and failed to respond to acid treatments at 4387 feet.

**Jones County:** H. K. Riddle et al's Barnhouse 1, NWc of SW¼ of N½ labor 2, League 350, Goliad County School Lands, and 7000 feet northeast of production, flowed oil by heads after 2-stage treatment with 4500 gallons of acid in Flippen lime at 2857-70 feet. Frank Buttram's Brown 1 is being started as an intermediate test.

## ☆ North Texas

### *Sivels Bend Has Commercial Production From Ellenburger*

Commercial production from the Ellenburger confirmed for Sivels Bend field, establishing producing-depth record for the district; confirmation well for Heard pool, Clay County, passes up indicated producer in the Bend; Archer County wildcat showing for small pumper.

**Cooke County:** Standard Oil Company of Texas' Beasley 2, south portion of the Sivels Bend field, flowed 96 barrels of 39-gravity oil on 18-hour test after using 12,000 gallons of acid through perforations at 8905-40 feet in Ellenburger, topped at 8640 feet. The well was produced through open tubing the first 5 hours then placed on a ½-inch choke to assure continuous flow. It is the deepest producer in the district.

Mid-Continent Petroleum Corporation's Morris 1, 1200 feet north of its 6900-foot Beasley sand producer, failed to register production in the 2 deepest Strawn sand zones in drilling to 7509 feet, and is attempting to complete from the Rasure, or discovery pay, through perforations at 6698-6720 feet.

**Clay County:** L. T. Burns et al's Ford 1, ⅜ mile northwest of the Heard pool's Ellenburger discovery, entered the Bend at 5751 feet, or 46 feet low, and tested at 5771 feet, resulting in gas to the surface within 5 minutes and recovery of 900 feet of oil-cut mud. It will continue to the Ellenburger, having progressed to 5995 feet. Two other tests are under way in the area.

**Archer County:** Kadane and Frank P. Cullum's Jones-Cullum 1, SW SW NE S.P. Ry. 2, A-1255, and 1¾ miles east by south of Mankins, was pumping 10 barrels daily after using 2000 gallons of acid through Strawn perforations at 4122-32 feet. It was plugged back from 4400 feet after Fain & McGaha, the original owners, disposed of their interests. A 5055-foot junked Ellenburger test to the northwest made a better showing from the same zone.

## ☆ East Texas

### *Rusk Has Gas-Distillate Travis Peak Discovery*

Rusk County has a gas-distillate discovery in the Travis Peak; Commercial gasser from Woodbine indicated by Cherokee County wildcat; Leon County Woodbine strike shows gain in output; Smackover lime prospect in Bowie County testing.

**Rusk County:** Delta Drilling Company et al's Rayford 1, Jas. Smith Survey and 2 miles south of Henderson confirmed a new deep producing area in testing 17 barrels of 51-gravity distillate on 8-hour natural test through ⅛-inch choke. Production is from 4 zones of perforations, aggregating 66 feet, between 7310-7464 feet in Travis Peak, topped at 7303 feet with elevation of 390 feet. Tankage has been set to continue testing through larger chokes. A test of the Pettit will be made later.

**Bowie County:** Barnsdall Oil Company, Sohio Petroleum Company and Phillips Petroleum Company's Pickering 1, R. E. Sevey Survey and 4 miles southwest of Texarkana, cemented pipe on top of the Smackover gas-distillate zone, entered at 7032 feet. The favorable drill-stem test previously reported in drilling to igneous rock at 7094½ feet heralded the opening of the second Smackover area for the county and state.

**Wood County:** Delta Drilling Company's White 1, J. Stark Survey and 1¼ miles northwest of a dormant low-gravity Woodbine discovery, logged first break in the Woodbine at 4826 feet and cored broken sand, densely saturated with oil to 4849 feet. This well correlates about 400 feet high structurally, thus revealing an expansive producing area. However, the oil is credited with being about 10½ degrees gravity, based upon laboratory analysis. The capped producer tested about 6 gravity oil that could not be pumped because of congealing in the hole opposite water sands up the hole. White 1 is due to be deepened to water.

**Cherokee County:** Tex Harvey Oil Company's Reitsch 1, O. Weir Survey and 10 miles northeast of Rusk, was preparing to perforate higher and opposite thin gas sand after flowing gas and salt water from perforations at 4347-49 feet in Woodbine sand, topped at 4340 feet. A commercial gasser is anticipated. Tom G. Shaw et al's Bolton-Pure 1, Chas. L. Widgeon Survey and 9 miles west of the Lone Star pool, is pumping about 5 barrels of oil and 115 barrels of water daily from Woodbine at 4171-74 feet, having plugged back from 4177 feet. This wildcat drilled into the pay last July, and has been inactive.

**Anderson County:** Humble Oil & Refining Company's Todd 1, Boggy Creek field, was drilling shale at 12,140 feet with the Travis Peak as its objective. Base of the Massive anhydrite was called at 10,345 feet. The company's Freeman 1, Brushy Creek prospect, entered the Massive anhydrite near the 10-190-foot level, and was drilling hard lime at 10,950 feet.

**Leon County:** Claude Bell et al's Browne and Carson 1, Thos H. Garner Survey and 3 miles southeast of Flynn, is showing for a pumper after a prolonged test of Woodbine at 7303 feet. This wildcat pumped 34 barrels of 39.4-gravity oil on 22-hour test, and is showing an increase in gas.

**Smith County:** Phillips Petroleum Company's Grelling 1, situated 3000 feet northwest of its South Tyler field discovery and a failure in Travis Peak at 10,885 feet, will be reworked to try for production in the Pettit, Rodessa and Paluxy. The latter zone, topped at 7514 feet, has since indicated commercial production for the area.

## ☆ East Texas Border

### *Harrison County Discovery To Make Production Test*

Harrison County discovery erecting tanks for production test; Whelan outpost squeezing perforations to test Travis Peak; Marion County prospective wildcat discovery drilling without shows.

**Harrison County:** R. W. Williams' Furhh Estate 1, Francis O'Neil Survey, Travis Peak oil discovery 3 miles northeast of Elysian field, was erecting tanks. The discovery was reported running around 30 barrels of 42-gravity oil through separator from 56 perforations at 6294-6308 feet, with production under ¼-inch top and bottom hole choke with 200 pounds tubing pressure, and 50 pounds casing pressure. Total depth is 6850 feet. Pending final completion and running of a potential, the operator is announcing no further plans for exploration of the discovery.

Rogers Lacy's Newman 1, L. V. Clark Survey, 1 mile southeast edge test in the Whelan pool, squeezed off casing holes in the Rodessa zone to perforate casing in the Travis Peak for new completion attempt. Depth is 7928 feet. One mile south of Harleton, Newman 1 reportedly tested salt water in the 2 zones perforated in the Rodessa, but found a gas sand in the Travis Peak, and completion as another wet gas producer is expected. Exact level to be tested is not revealed.

**Marion County:** Magnolia Petroleum Company's Orr 1, Fowler Survey, Avinger area, was drilling at 9785 feet, without change, but there were some reports, which were officially denied, that saturated sand had been found at 9550-65 feet. This well, a wildcat, reputedly indicated Travis Peak oil discovery at 7577.

Drilling had reached 2700 feet at a new northwest outpost test in the Jefferson field at the Lacy-Allied Oil Company's DeWare 1, J. M. Walker Survey, northwest of Jefferson townsite. The test is northwest of the Lacy-Allied Company's Scott 1, Johnson Survey, producing 1,600,000 feet of gas and 20 barrels of distillate daily from the Hill zone.

## ☆ South Central Texas

### *Gonzales Area Wildcat Has Oil From Glenrose Formation*

Gonzales area wildcat gets oil from Glenrose formation; Buda production extended in the Pearsall field; Casing set in Gas Ridge deep test; Jourdanton area test sets casing in Edwards lime.

**Gonzales County:** Quintana Petroleum Company's Anna Spahn 1, wildcat 4 miles northwest of Gonzales, was reported drilling with special tools after setting a liner to 10,800 feet. On a drill-stem test in the Glenrose formation, 600 feet of clean oil and 400 feet of oil-cut mud were recovered.

**Frio County:** H. W. Snowden et al's Cory & McWilliams 8, Jose Arrocho Survey 299, Block 4 of the Leona River Subdivision, Pearsall field, extended the Buda production and became the second

Buda producer. It was gauged for an estimated 10 barrels of 42-gravity oil per day on ⅛-inch choke from perforations at 5920-44 feet. The Buda formation was topped at 5929 feet and the well came in after acidizing.

**Bexar County:** H. A. Pagenkopf's (Chenoweth & Harroun Max Blum 1, Gas Ridge deep test, on a 400-acre lease in the M. F. Rodriguez Survey, drilled below 7500 feet. A log was run at 6088 feet and 7-inch casing was set at 5650 feet.

**La Salle County:** Humble Oil & Refining Company's St. Louis Union Trust Company 1, wildcat 22 miles east of Encinal, GB&CNG Survey 1249 and north of Humble's Withers 2 dry hole, was reported conditioning mud after drilling to 6413 feet. It is slated for 7700 feet.

**Atascosa County:** Humble's A. N. Moursund 1, second test and outpost in the Jourdanton area, 1 mile southwest of Jourdanton on an 80-acre tract in the Edward Estes Survey 1188, has set 5½-inch casing in the Edwards lime. Total depth is 7371 feet, and production tests on the drill stem were made at 7364-71 feet prior to setting pipe. Henry Schorsch 1, discovery well for the area, was completed as a gasser from perforations at 7263-95 feet.

## ☆ Southwest Texas

### *Duval County Kohler Field Project Jets Oil on Test*

Kohler well jets oil on test; Rincon outpost cuts gas-odor sands; Webb County test sidetracks hole to make production test.

**Duval County:** Glenda Oil Company's Leila Peters 1-C, 3000-foot test on a 12-acre lease in the J. H. Gibson Survey, Sect. 379, Kohler field, jetted 32 barrels of oil in 18 hours from 17 perforations at 1839-45 feet. Total depth was 1934 feet.

**Starr County:** Zimmerman & Garcia's M. M. Garcia 1, west of the Rincon field production and 18 miles northeast of Rio Grande City on a 335-acre lease in Survey 918, Block 6, was shut down waiting on orders after sidewall samples taken at 2198-2208 and 2940-66 feet indicated sands with a light oil odor. This is scheduled for 5000 feet.

**Webb County:** Blanco Oil Company & Al Buchanan's A. M. Bruni 2, in Block 28, Brown Subdivision of the Albercas Grant, and 467 feet north of the Bruni 1, was reported sidetracking hole after twisting off the bit before making a test at 2587-93 feet where cores showed sands with slight oil odor.

**Zapata County:** M. L. Massingill's Serapio Vela Estate 1, 12 miles northeast of Zapata on a 620-acre lease in the Isable Gonzales Grant, Porcion 27, topped the Queen City at 2160 feet, and was drilling below 3636 feet.

## ☆ Lower Texas Coast

### *Saxet Field Has New Sand; Goliad Test Is Extension*

New sand opened in Saxet field; Jay Simmons completes wildcat to effect extension of South Cabeza Creek field;


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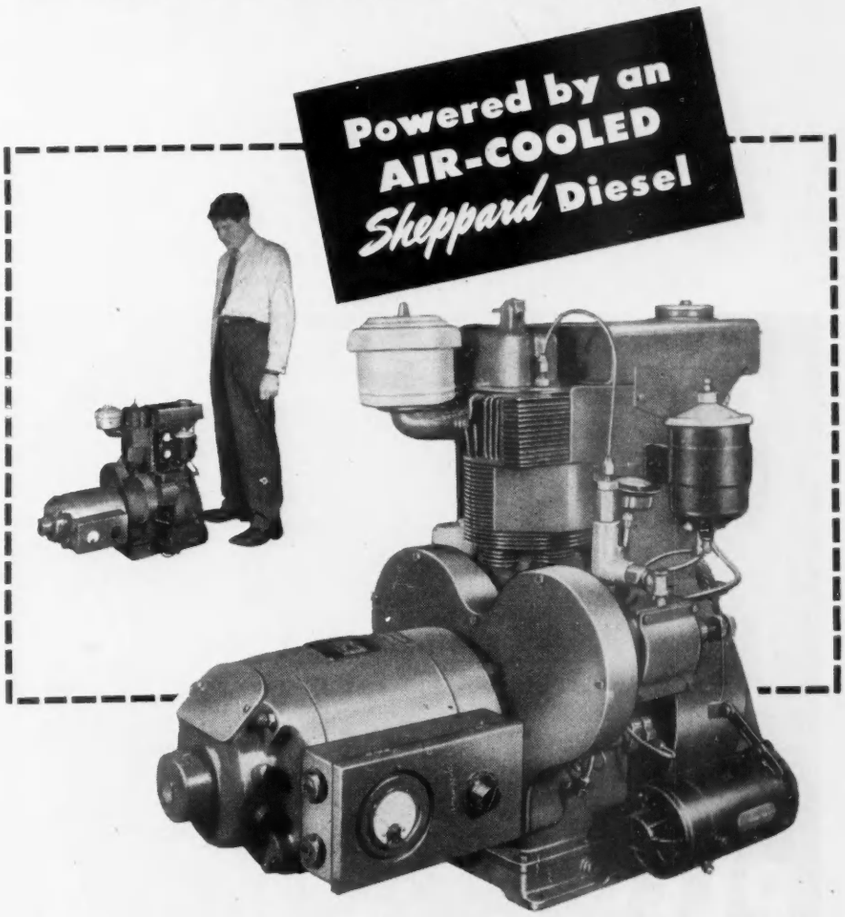


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good gas-condensate test made on Bee County wildcat; Phillips fishes for drill collar in Gregory test.

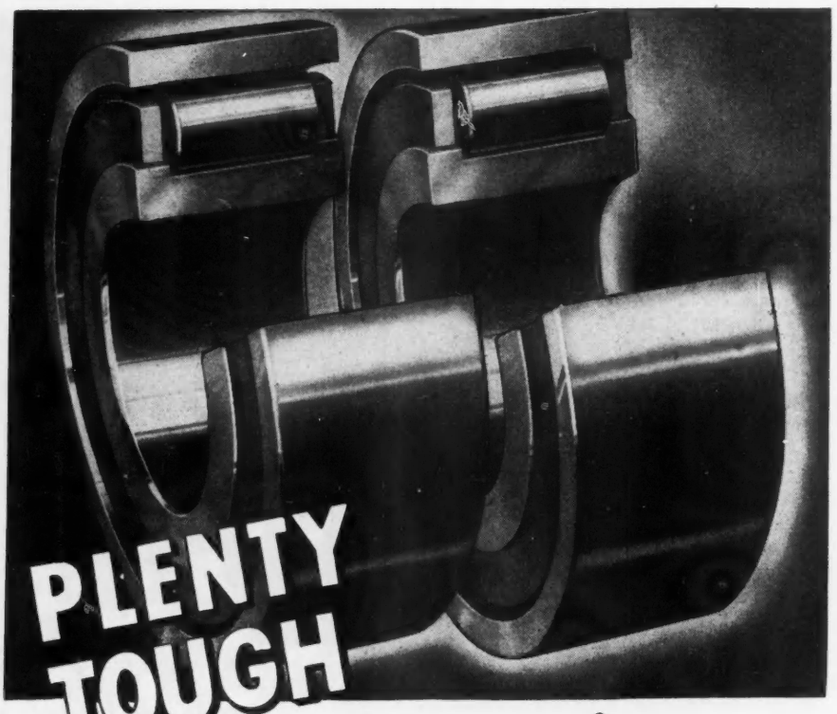
**Nueces County:** Richardson Petroleum Company's L. G. Talbert 1, west flank test of the Saxet field, on a 314.5-acre lease in the Russell Farms Tract, made a potential of 164.39 barrels of 38.6-gravity pipe line oil daily on a 7/64-inch choke from 12 perforations at 6643-45 feet to open a new producing sand in the Saxet Deep field. Tubing pressure gauged 925 pounds and casing pressure 1050 pounds with gas-oil ratio 553/1. Top of pay was encountered at 6635 feet with 5½-inch casing set at 7492 feet. Total depth of well is 7495 feet.

**Goliad County:** Jay Simmons' Mary Poehler 1, wildcat 2 miles northeast of production in the South Cabeza Creek field and on a 78.31-acre lease on the northwest line of the Jacob Fifer Survey, has run a liner to bottom at 8328 feet in the Wilcox zone and will perforate in the South Cabeza Creek field pay sand to effect an extension of the field which has been expanded over a large area. A major producing area is indicated in the Wilcox and embraces the Cabeza Creek, the South Cabeza Creek and the Boyce producing horizons adjacent to the Slick field of DeWitt-Goliad counties on the south, and extending southward to the "Albrecht" discovery in the Manuel Carriona Grant. It is likely that these are companion structures closely related to one another but producing from different horizons. The well has 5½-inch casing set at 8289 feet. Perforations at 8286-89 feet made a good show for production.

**Bee County:** Mills Bennett's Martha Berger 1, wildcat test 2 miles southwest of Tuleta and in the Uranga Grant, made 180 feet of distillate and 240 feet of fresh water with no salt water reported on a 40-minute drill-stem test from perforations from 8130-40 feet. Flowing pressure at the surface gauged 2900 pounds while the bottom-hole pressure was 4500 pounds, and shut in pressure below reached 4900 pounds. Operators plan to perforate from 8082 feet, top of the sand, to 8130 feet for the completion. Total depth was 8890 feet with 7-inch pipe set to 7970 feet and a 4-inch liner hung to bottom.

**San Patricio County:** Phillips Petroleum Company's McCann Unit 1, wildcat 6 miles east of Gregory, was sidetracking hole at 9490 feet. A drill collar was lost in the hole when drilling became difficult at 9727 feet. The well is scheduled to 10,500 feet.

**Brooks County:** Humble Oil & Refining Company's Juan Ramirez 1, new test at Rachal field, El Encantada Grant, located on a 104.16-acre lease, was reported setting surface pipe. The well was spudded February 23.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## ☆Upper Texas Coast

### *Mayes Extension Try Coring After Production Attempt*

Humble coring after third production test in Mayes extension test; Hackberry producer given gauge; Magnolia makes production tests in 2 Trinity County tests; Extension wildcat near Columbus prepares for completion.

**Chambers County:** Humble Oil & Refining Company's Lula Wallis et al, wildcat discovery for a new oil sand in the area more than a mile southeast of production in the Mayes field, prepared to core after a third unsatisfactory production test from 36 perforations at 9918-24 feet where the well flowed 8.27 barrels of 48.8-gravity fluid per hour through 3/16-inch choke. Tubing developed 3675 pounds pressure and made a gas-oil ratio of 14,000/1. Present depth is 10,010 feet with 5½-inch casing set at 9995 feet. Previous open-hole tests below the casing gauged 27 barrels of high-gravity condensate on a 11½-hour test through a ¼-inch choke.

McCarthy Oil & Gas Corporation's Tyrell Trust 3, 4.3 miles northwest of Hamshire in the W. C. Dunshie Survey, Sect. 82, about 2 miles from production in the Winnie area and just over the Jefferson County line, has been given a potential of 217 barrels of 39.6-gravity oil daily through an 11/64-inch choke from perforations at 10,161-69 feet. Total depth is 10,789 feet with 5½-inch pipe set at 10,785 feet. This is claimed to be the first Hackberry sand production in Texas.

**Hardin County:** Sun Oil Compnay's Carpenter 1, on the south flank of the Sour Lake field in the Stephen Jackson League, was completed for 128.76 barrels of 36.9-gravity oil daily through ⅛-inch choke from 68 perforations at 4565-82 feet. Tubing developed a pressure of 600 pounds while the casing pressure was 1000 pounds. Total depth of the well was 5406 feet.

**Trinity County:** Magnolia Petroleum Company's Oscar Gibson 1, wildcat test in the Apple Springs area, C. Sanchez Survey, Abstract 39, has been plugged as a dry hole at 8407 feet in the Edwards

lime. A drill-stem test from 8325-37 feet made no commercial shows. Previous tests were made from 8194-8200 feet, but only drilling mud and the water cushion were recovered.

Magnolia reperforated Bolton 2, 3 miles west of Glendale in the Henry Bond League, Abstract 75, at 11,698-711 feet with 17 shots and pumped in more cement. Previous squeeze jobs were made at 11,740-42 feet and 11,698-700 feet, but failed to give a dry test. Additional perforations were made at 11,710-30 feet for another production test. Total depth was 12,505 feet with 7-inch pipe set at 10,642 feet. A 5-inch line was swung inside the pipe and cemented on bottom.

**Austin County:** Humble's Luther R. Sherrod 16-Y, deep test at Raccoon Bend, in the Wm. C. White Survey, Abstract 101, drilled below 10,111 feet in hard shale and hard sand.

**Colorado County:** Texas Gulf Production Company's Earling Landig 1, extension 5750 feet northeast of the discovery well at Columbus, drilled cement plug after setting 5½-inch casing at 8861 feet with total depth at 8864 feet, and is preparing for production tests. The well cored all sands corresponding to those in the discovery well, and also a new sand showing oil topped at 7312 feet. Before final completion, tests will be made in several of these sands. First sand showing oil was topped at 7312 feet, the next at 7875 feet where a drill-stem test recovered 1380 feet of oil and 180 feet of salt water.

## ☆ South Louisiana

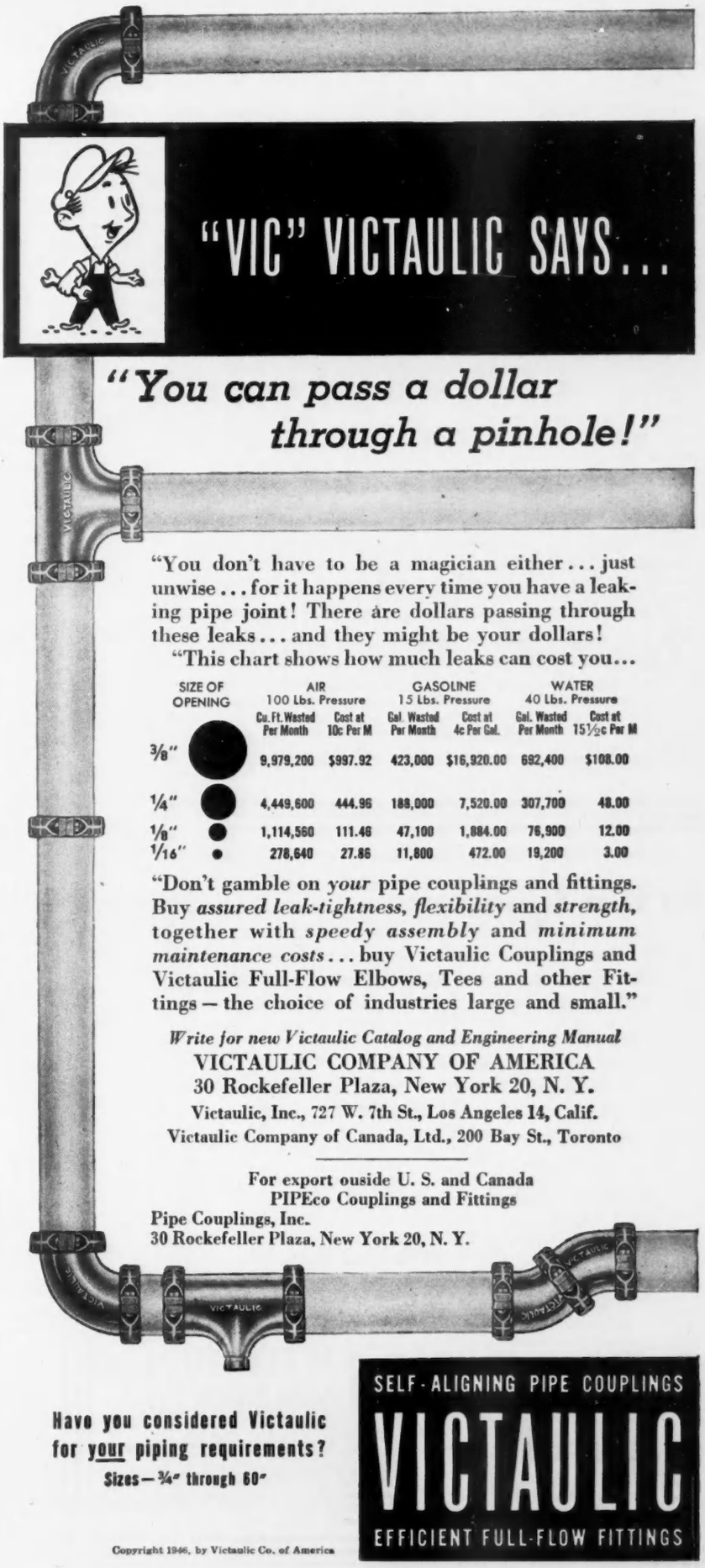
### *New Production Area Opened By Little Temple Wildcat*

Little Temple wildcat gets production test; Big Island wildcat makes oil; Sun perforating for second test in Beauregard well; Superior cleans up blowout in Iberville Parish test to make another try.

**LaFourche Parish:** Humble Oil & Refining Company's Louisiana Delta Farms Company 1, 19-17s-23e, Little Temple wildcat, has opened a new producing area. On a 3-hour test, the well flowed 18.9 barrels of 47.6-gravity oil and 52 percent salt water from 32 perforations at 10,587-91 feet. The gas-oil ratio was estimated at 13,000/1 with a flowing tubing pressure of 3000 pounds. Total depth is 12,007 feet with 5½-inch casing set at 10,735 feet.

**Rapides Parish:** Union Producing Company et al' Belgard 1, wildcat test in the Big Island area, NE NW 14-4n-3e, northeast of Alexandria, was coring after making a drill-stem test at 10,006-209 feet. On a 5-hour test, using ¼-inch chokes top and bottom, the well developed a maximum working pressure of 350 pounds and flowed the 1500-foot water cushion, salt water and some 40-gravity light green oil. This show is in the limey sand zone above the Paluxy, and wall samples taken in the Massive section of the Tuscaloosa indicate commercial production. Seven-inch pipe was set at 10,008 feet.

**Beauregard Parish:** Sun Oil Company's Rice Land & Lumber Company 1, 32-4s-11w, Singer area, was running a gun-perforator for shooting at 12,315-25 feet for a second test after tests failed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Cu. Ft. Wasted Per Month
Cost at 10c Per M
GASOLINE 15 Lbs. Pressure
Gal. Wasted Per Month
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WATER 40 Lbs. Pressure
Gal. Wasted Per Month
Cost at 15½c Per M
3/8" 9,979,200 $997.92 423,000 $16,920.00 682,400 $108.00
¼" 4,449,600 444.96 188,000 7,520.00 307,700 48.00
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at 12,435-45 feet. In the latter zone, no surface pressure was indicated, and only a slight gas blow showed. Total depth of the well is 12,662 feet with 7-inch pipe set on bottom.

**Iberville Parish:** The Superior Oil Company's Schwing Lumber & Shingle Company 25, 74-9s-10e, drilled to a total depth of 4470 feet, and was coming out of the hole when the well blew out, caught fire and burned the derrick, rig and machinery before it sanded up and choked off. It was blowing gas and salt water. Operators are moving in new equipment and are cleaning up preparatory to resume operations. The hole is slated for 5000 feet.

**Plaquemines Parish:** Tide Water Associated Oil Company's Manhattan Land & Fruit Company 2-C, 23-21s-30e, was gauged for a commission potential of 206 barrels of 38.6-gravity oil daily through an ⅛-inch choke from 108 perforations at 10,807-25 feet. Tubing flow pressure was 1650 pounds. Total depth of the well is 12,631 feet with 5½-inch pipe set a foot off bottom.

**Cameron Parish:** Continental Oil Company and Sohio Petroleum Company's Cameron Parish School Board 1, wildcat test in the Johnson's Bayou area, 16-15s-14w, was reported attempting to loosen a Yowell tool which became stuck at 8631 feet. Total depth of the hole was 8857 feet with plans set for 9500 feet.

**Iberia Parish:** Humble Oil & Refining Company's Petit Anse Company 8-B, at Avery Island, 23-13s-5e, flowed 24 barrels of condensate and 1,115,000 cubic feet of gas daily on a drill-stem test conducted from 72 perforations at 9503-13 feet. The tubing pressure was gauged at 3200 pounds.

## ☆ North Louisiana

### *Caddo Prospective Strikes Are Near Critical Depths*

Caddo wildcat prospective discoveries drilling; Bossier Parish outpost finds Bodcaw sand dry; Richland and Franklin Parish wildcats seem unlikely to find production.

**Caddo Parish:** Union Producing Company's Fly 1, second wildcat in the Mooringsport area where it has a potential discovery drilling, SW NE 16-19-16w, was drilling at 1790 feet. Same operator's Noel A-1, SW SW 11-19-16w, reputedly showed production possibilities in the Pettit. A core from 8525-39 feet recovered 2500 feet of gas-cut mud.

**Sabine Parish:** The Carter Oil Company's Louisiana Long Leaf Lumber Company 1, NE SW 27-7-10w, set surface casing for a 9000-foot wildcat test in the Many area. Location is approximately 8 miles southwest of Union Producing Company's Louisiana Long Leaf Lumber Company 1, SW SW 29-8-11w. This latter test drilled at 3697 feet. L. & L. Oil Company's Pelican State Bank and Burr 1, SE NW 25-10-13w, was drilling in sand and shale at 1340 feet. Panhandle Drilling Company's wildcat, E. E. Meshell 1, SW NE 22-7-14w was drilling in shale at 2005 feet.

**Bossier Parish:** G. H. Vaughn's Herrick-Johnson 1, SW SW 36-21-13w, was delayed in completion by stuck drill pipe. Operator had previously tested for an outpost gas distillate producer from the "D" sand of the Cotton Valley at 8013-48 feet, and drilled ahead to 8193 feet, finding the Bodcaw sand dry. Barnsdall Oil Company's wildcat, Carter-Burton 1, NW NW 26-23-13w, near Plain Dealing, was at 8556 feet, without a show reported in the Cotton Valley to date. Same operator's Crystal 1, wildcat in SE SW 28-21-11w, was going back into the hole in Travis Peak formation at 7956 feet.

**Natchitoches Parish:** Magnolia Petroleum Company's wildcat, Union Sawmill 1, SW SE 7-6-6w, was drilling at 7167 feet in chalk.

**Richland Parish:** Big Chief Drilling Company's wildcat George B. Franklin 1, SW SE 7-17n-9e, 2 miles north of Delhi production, is drilling below 3915 feet without showings. A core was taken at 3400 feet. Drilling will go to 4500 feet in the Travis Peak.

**Franklin Parish:** Big Chief is preparing to move in material for J. S. Ames 1, c ne nw 2-16n-9e, wildcat test 2 miles south of Delhi, which will begin drilling when rig is released from Franklin 1. F. Boykin King Company's wildcat, Baskin Estate 1, C SE NW SW 35-16n-7e, 5 miles southwest of Big Creek production, is drilling below 3555 feet near contract depth, without showings.

### *Kansas Oil Meeting*

Kansas Oil Men's Association, meeting in annual convention March 11-12 in Wichita, will hear talks by Governor Andrew Schoeppel, Alex Drier, NBC news commentator. Barney Majewski, president of Deep Rock Oil Company, Paul Williams, Midwestern Refiners Associated, Bert Mitchner, Kansas director of revenue and Warren Platt, editor of the National Petroleum News.

## ☆ Arkansas

### *Wesson Field Has Producer Two Wells Ready to Complete*

Active Wesson field, Ouachita County, gets new producer, 1 dry test, 2 wells ready to complete; Haynesville extension area well squeezing to test; Columbia County wildcat rigging up; Village field reworked well flowing into tanks, without gauge.

**Ouachita County:** McAlester Fuel Oil Company's Wesson field edge test C. M. Wesson B-3, NW SE NW 24-15-19, set casing on bottom at 3105 feet, and perforated near the 2900-foot level. A high pressure was reported, but plug was set and the Glen Rose sand will be tested at a higher level. Same operator's R. W. Wesson A-3, SW NW SE 24-15-19, was drilling around 3000 feet and expected to be ready for test in a few days. Its R. W. Wesson B-1, SE SE SE 24-15-19, was gauged at 105 barrels of 33-gravity oil daily, flowing through 10/64-inch choke from the Glen Rose sand at 2595-2609 feet, tubing pressure 200 pounds and gas-oil ratio 200/1. Bob Milam's A. C. Wesson 1, NE NE SE 23-15-19, was dry at 3434 feet.

**Columbia County:** McAlester Fuel Oil Company's Z. P. Duncan A-1, C SE NW 10-17-19, Village field, was completed through open hole after being reworked. After deepining from 7404 to 7410 feet, perforations were made between 7404-5, and packer set at 7400 feet. The well is flowing into tanks, gauge not announced. Flowing into pits before going


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into the tanks, its production was estimated at 125 barrels daily, with about 40 perecent salt water.

McAlester's wildcat, W. H. Russ 1, SW SW 12-16-20, has derrick up and is waiting on rig. This well is about 1 mile south of Stephens field production, and 4½ miles northeast of McNeil. In the Haynesville extension, Skelly Oil Company's Myrtis Pipes Unit 1, E SW C 26-19-20, was still testing after squeezing from 5632-48 feet and setting pipe again. During swabbing some oil was reported recovered, with about 20 percent salt water.

### *Several Western Tennessee Tests Probable This Year*

Several geophysical crews are reported in Western Tennessee, indicating that some tests may be drilled this year to determine production possibilties in the Paleozoic section where about a dozen dry holes have been drilled.

Approximately 15 miles southeast of Memphis, E. R. Owens et al of Jackson, Miss., have a 10,000-acre block with a well drilling below 2275 feet in the Midway formation. The test is about 3 miles from Capleville and 1½ miles from the Mississippi state line. Memphis Natural Gas Company is reportedly interested in the venture. Some geophysical work is projected in De Soto County, Mississippi, and in Shelby County, Tennessee, where 2 drill holes have been drilled to just above 2900 feet.

Near LaGrange, Fayette County, Clint Milan may start a test on a prospect which was geologically surveyed about 2 years ago by John W. Merritt of Tulsa. Anderson & Kerr drilled a well in this vicinity several years ago which had some shows. North of Somerville, Americrude Oil Company, a Michigan firm, has an 8000-acre block and plans to start a deep test. Other blocks in the general area, believed to be on a geophysical high, are held by H. W. Whitney of Mount Pleasant, Michigan, M. W. Shriver of Dallas, and Fred Browning of Fort Worth.

Stephens Petroleum Company of Oklahoma City is drilling below 2200 feet in a test near Michie, just across from the Mississippi state line.

Heavy leasing is reported on both sides of the Mississippi River, and on the Arkansas side near West Memphis, S. H. Wilson of Houston may drill 3 tests on a 50,000-acre block. The United States Geological Survey and the Memphis Water Company are said to be ready to drill 10 water wells within a 50-mile radius of Memphis and these wells, which are projected to the top of the Paleozoic, should furnish some valuable sub-surface information.

Another area likely to receive some attention this year is that east of Covington in Tipton County, where The Pure Oil Company drilled a dry hole several years ago. Fred Browning et al of Fort Worth have a 17,000-acre block which carries a drilling obligation. Just west of this concentration and along the southern county line another block is being assembled in an area where Shell Oil Company and Stanolind Oil & Gas Company did considerable geological work. In Stewart County, S. P. Berry and O. W. Skirvin et al of Oklahoma City, have a block of 15,000 acres located between the Tennessee and Mississippi rivers. It is believed that three structures have been worked out on the block, known locally as the Moltke, Bear Creek and Standing River structures, and it is expected all 3 will be drilled. Considerable surface geology has been worked out in this general area.

## ☆ Mississippi

### *Adams County Has State's First New Field of Year*

Adams County wildcat successfully completed for year's first new field; Carthage Point well completed as better producer than discovery well; Lawrence County test finally abandoned.

**Adams County:** Roeser & Pendleton-Sohio Petroleum Company's Baker-Maier 1, NWc 34-6n-2w, 8 miles southeast of Natchez, has been successfully completed to mark the first new field for Mississippi for 1946. Considerable trouble with salt water is being encountered, however, and the well probably will be reworked later. The Baker-Maier was drilled to 10,673 feet and then perforated with 30 shots at 10,544-49 feet opposite the Massive sand section. The first tests were not too successful and the well was acidized with 1000 gallons. In its initial production test it flowed 97 barrels of 39.2 oil and 400 barrels of salt water per day through ¼-inch tubing choke with a gas-oil ratio of 4000/1.

Phillips Petroleum Company's Davey 1, 46-8n-2w, wildcat about 8 miles northeast of Natchez which appears to be indicative of commercial production also continues to experience trouble with salt water. Preparations were being made to acidize producing section and tests of the Massive sand will continue. Humble


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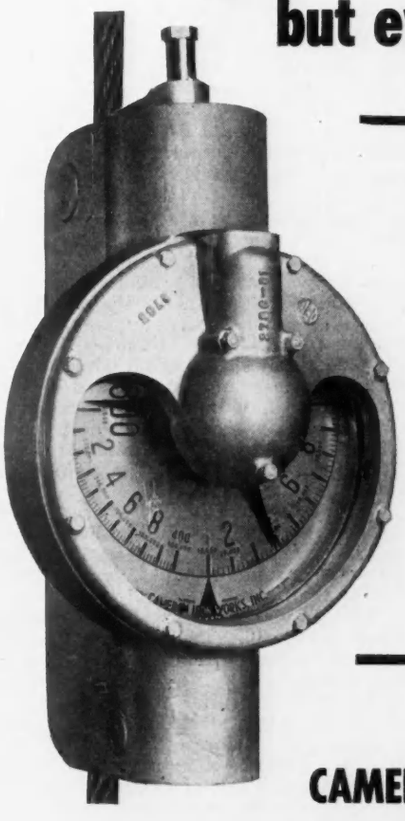

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Oil & Refining Company's Mrs. C. L. S. McKittrick 1, SEc 12-6n-3w, Carthage Point field, has been successfully completed as a gas-condensate producer at one of the deepest producing depths in the state. The casing was perforated at 10,278-83 feet opposite the Massive sand zone and on its initial production test the well flowed 250 barrels of 54.4-condensate and 2,278,000 cubic feet of gas per day through ¼-inch tubing choke. The McKittrick is the first well to be completed in the field in almost a year and extends the field ½ mile east. The California Company's National Gasoline Company of Louisiana 14, 52-7n-1w, offset to the discovery well in Cranfield, was preparing to run tests in preparation for completion from the Wilcox horizon in the 5800-foot zone.

**Holmes County:** Cities Service Oil Company's Will Luster 1, wildcat in C NW SW 35-14n-2e, is drilling below 5115 feet in the Eutaw section without shows. I. P. Larue's J. A. Weeks 1, NWc SE SE 20-15n-5e, wildcat, is reported to have had salt water through the Eutaw section. The well may also explore the Tuscaloosa. Both of these wells are being drilled tight, but geophysical findings in this county have been very favorable and the results of the tests are being watched closely.

**Lawrence County:** Humble's V. L. Parkman 1, SWc 8-6n-20w, wildcat, has been abandoned after a year of effort. The well aimed to test the flanks of the Arm salt dome and originally was drilled to a depth of 7588 feet after which it was whipstocked and thoroughly tested. No shows were reported at any point along the hole but reports indicated the test was getting good closure and results were not unfavorable for further explorations.

**Warren County:** Magnolia Petroleum Company's Ruth Pidgeon 2, SWc SE SE 27-17n-4e, wildcat which occasioned interest with a high-pressure gas flow, is running core tests in the 1400-1500 foot zone in the effort to exploit original findings. Cores taken at 1464-66 feet recovered slight shows of oil while a subsequent drill-stem test at 1472-77 feet had a good flow of gas. Cores taken at intervals below that point also recovered slight shows of oil. The well is being drilled on the flanks of the Kings salt dome.

**Wayne County:** R. L. Fisher's G.M.& O. R.R. Co. 1, SE NE 22-9n-8w, Eutaw test, is drilling below 4871 feet in chalk. Productive sands should be encountered within the next 300 feet.

**Jeff Davis County:** Gulf Refining Company's Vinnie Walker 1, NWc NE SW 34-9n-19w, attempted extension of the Gwinville field, was preparing to run a drill-stem test after encountering considerable salt water on previous test. Casing was perforated at 8074-90 feet in the Tuscaloosa zone and flowed 3,600,000 cubic feet of gas and 24 barrels of 49.9-gravity condensate on 24-hour test. On second test with production packer at 8056 feet, the well was swabbed and flowed gas and fluid with 99 percent salt water content.

**Madison County:** Leonard Jones' J. R. Anderson 3, SW SW NW 1-8n-1w, Flora field, is waiting on cement after running casing to 4354 feet. Electrical log has been run to that depth, but no shows have been reported.

### Alabama

J. H. Deason's DeBardeleban 1, SE NW 6-14s-5w, Walker County, wildcat, is drilling below 1853 with no shows.

**Winston County:** Glen D. Rose Oil & Gas Company's First National Bank of Birmingham 2, NW SE 7-12s-8w, is drilling below 312 feet in a shallow test.

**Mobile County:** Mikton Oil Company's Mike Vergos 1, C SE NW 21-3s-2w, has located Vargas 1, a rotary deep test.

### Florida

O. D. Robinson's State Well 1, NEc NW 29-59s-40e, Monroe County, deep test, is running additional core tests below 10,260 feet after cores taken of the zone recovered dolomite with shows of oil. This is the first encouragement shown by any Florida test within the last 12 months, although there are no indications that the well has commercial possibilities.

Gulf Refining Company's State 1, SWc 2-67s-29e, wildcat, is working below 3833 feet with no shows reported.

**Collier County:** Humble Oil & Refining Company's Gulf Coast Realty Company 6, SW NE 19-48s-30e, Sunniland field, is drilling below 9860 feet in lime. Cores taken in the 9740-55-foot and 9755-841-foot levels recovered shows of heavy oil. Preparations were being made to run test of the horizon.

**Liberty County:** The Pure Oil Company's Neal Lumber Company 1, NWc 33-2s-8w, wildcat, is drilling below 4212 feet with no shows.

### Georgia

James E. Weatherford's H. Wilkes 1, located about ½ mile west of Higgston, Montgomery County, is drilling below 712 feet in a shallow test.

**Crisp County:** Kerr-McGee Oil Industries' (was Kerlyn Oil Company's) Cecil Pate 1, C SE Lot 144, Thirteenth Land District, was abandoned by operators at 5010 feet without commercial indications. The following geological tops were reported from electric log: Cretaceous 995 feet, Tuscaloosa 2390, Lower Cretaceous 3150, bottomed in red shale. Elevation of well is 350 feet.

## ☆ California

### *Texas Has Gas Discovery In Dunnigan Hills Area*

Gas field discovered in Dunnigan Hills area, Yolo County; well in Cymric oil field flows 15 million cubic feet of gas on test of Oceanic zone; Schist formation found unproductive in Ant Hill field; Santa Paula deep test quits at 11,132 feet.

**Yolo County:** The Texas Company's Hermle 1 in 22-11n-1w, Dunnigan Hills area, tested 3,030,000 cubic feet of gas through 3/8-inch choke. Producing intervals are 2570-80 feet and 2612-20 feet. Well was plugged back from a total depth of 4022 feet and 5½-inch casing cemented at 2660 feet. Shut-in pressure is 984 pounds.

**Kern County:** In the Cymric field Standard Oil Company of California's Weston 71 in 27-29s-21e has turned in an outstanding performance on recent tests. Well first flowed 1500 barrels from what is reported to be Phacoides sand at 3986-4030 feet. Drilled to the Oceanic sand into what appears to be a gas cap, it tested the interval 4453-4653 feet and flowed 14 million cubic feet. Prepara-

tions were being made to complete. Standard's Weston 82, also in Sect. 27, is coring below 4795 feet in oil sand.

In an endeavor to extend Cymric production, Independent Exploration Company has staked Temblor 2 in 17-29-21.

Amerada Petroleum Corporation's Siegfus 1-22 in the Ant Hill field, a try for Schist production, failed in this objective and has been plugged back for completion in the Jewett zone. A test of the Schist at 4190-4282 feet recovered only drilling mud.

The deep test of the Buena Vista Lake area, BVA 73, being drilled jointly by Seaboard, Wilshire, Universal Consolidated and Mohawk oil companies, with the Stevens zone as its objective, has drilled into the Upper Stevens and is coring below 11,040 feet. Formation is hard, tight gray sand.

Bandini Petroleum Corporation has given up attempts to obtain production in the lower part of Bacon 1 in 27-28-20, Bacon Hills area. With total depth 11,001 feet, hole has been plugged back to 9825 feet for tests of gun-perforated intervals between 9425-9480 feet.

Terry Oil Company's Oildale wildcat, K.C.L. 1 in 18-29s-28e, probably will be abandoned. Recovery was all water on test of gun perforations between 2120-70 feet.

**Tulare County:** William C. McDuffie's Goshen wildcat, Bennett 1 in 15-18s-23e, drilled into basement at about 4050 feet and has been abandoned.

**Los Angeles County:** Setting at rest any doubt as to the importance of Richfield Oil Corporation's discovery of a new field in the East Los Angeles area, Vail 1 in 16-2s-12w was brought in last week flowing 1560 barrels of clean 36-gravity oil through 3/8-inch choke and 3,700,000 cubic feet of gas from sands of Miocene age. Flow pressure was 1480 pounds. The producing interval is at 7902-52 feet.

Richfield's original well in the area, Union Pacific Unit 1 in 9-2s-12w, is currently producing 166 barrels net of 32-gravity oil, 71 percent cut, through a 20/64-inch choke and will doubtless be considered the discovery well of the field. Sand behind the pipe equivalent to that successfully tested in the Vail well remains to be tested. Company's intention is first to determine conclusively the source of the water in the Union Pacific well.

The Ohio Oil Company's second wildcat in the Gardena area, just outside Los Angeles on the south, Gardena Community Four 1 in 23-3s-14w, is drilling below 7290 feet in sand and shale.

Marine Exploration Company's State 1 in 11-5s-12w, being whipstocked out under the ocean from a surface location in Seal Beach, has 5-inch flush joint casing frozen in the hole at 7700 feet. Pipe could not be freed and well is standing suspended. Total depth is 8050 feet.

Shell Oil Company's new disovery 3/4 mile southeast of the Dominguez field, Dominguez Estate 1 in 2-4s-13w is currently pumping 95 barrels of 27.5-gravity oil, 23 percent cut. Production has declined from that obtained when well was first placed on pump.

**Ventura County:** Standard of California has abandoned Santa Paula Unit 1 in 10-4n-20w, bottomed at 11,132 feet. Drill collar and bit were lost in the hole and could not be recovered.

## ☆ Michigan

### *Gratiot County Shallow Gas Possibilities Enhanced*

A. E. Williams' Castler 1, SE SE NE 15-9n-1w, Elba field, Gratiot County, showed an estimated 3 million cubic feet of gas at 700 feet in the Michigan Stray sand to enhance shallow gas possibilities of district. It is ½ mile from the well completed last week in the same horizon which gauged 3,400,000 feet in Michigan Stray. Play originally started for 2450-foot Traverse oil production.

**Mecosta County:** Sun Oil Company is producing about 25 barrels of distillate and 500,000 cubic feet of gas daily from the Denslow 1, S½ SE NE 2-16n-8w, on the northwest side of the Fork field, from the Detroit River at 5198 feet. The well was completed a year ago and shut in to work out a market deal for gas. Gas is being sold to Dow Chemical Company at Midland, Mich. It marks the first commercial utilization of a Detroit River gas-distillate pay in Michigan. Relatively low yields and high costs of development plus little market interest for gas has checked development of the horizon up to this time. Sun plans to deepen an offset, abandoned at 4200 feet a year ago, for the same horizon.

### *Humble Opens Office*

An office has been opened in Columbia, Miss., by Humble Oil & Refining Company to handle production and drilling in Jeff Davis, Lamar and Marion counties as well as exploration in the surrounding area.


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## ☆ Illinois Basin

### East Denver Area, Illinois, Has New Producing Horizon

East Denver township area, Richland County, Illinois, given new producing horizon; Jefferson County test is pool opener or West Markham City area extension; Mattoon pool Devonian discovery, Coles County, preparing for final tests; Continental is starting long-awaited Devonian test in Griffin pool, Gibson County, Indiana; Kentucky has new producing area west of Henderson pool.

J. J. Lynn's Hayes 1, 12-4n-9e, Richland County, producing from Rosiclare sand to give the East Denver township area a new producing horizon. The well flowed nearly 50 barrels of oil per hour on early tests. Other production is from McClosky lime.

**Jefferson County:** A new pool or ½ mile northeast extension of the West Markham City pool is opening at Gulf Refining Company's Knox 1, NE NE SE 4-3s-4e. During a drill-stem test of Aux Vases sand at 2898-2913 feet, the well showed 2133 feet of oil in an hour. Total depth of hole is 2923 feet.

**Clay County:** H. F. Robinson was preparing to test Tar Springs sand at Neff 1, SW SW SE 16-3n-7e, midway between the East Flora and Flora pools.

**Coles County:** National Consumers' Herkimer 3, SE NW NE 11-12n-7e, Devonian discovery in the Mattoon pool, has installed separator and pipe lines and was preparing for final tests. The well showed for 5 million cubic feet of gas from the upper Devonian with approximately 75 barrels of oil. However, the lower Devonian, which was regarded as the best of the 2 possible production zones, has not been tested.

Ashland Oil & Refining Company has set pipe to test Rosiclare sand at Pinnell 1, SW C 26-12n-7e, about midway in a productionless gap of ½ mile (north-south) on the west side of the Mattoon pool.

Walter Duncan is drilling below surface casing at Cobb 1-A, C of SW SE 10-13n-7e, several miles north of Mattoon pool production and in an area where The Carter Oil Company recovered oil but abandoned a well as noncommercial several years ago.

**Christian County:** John Wrather's Thompson 1, SE of C 15-15n-2w, north of the Mt. Auburn pool, is pumping 30 barrels of oil daily from Devonian lime for an extension well.

**Indiana**

Continental Oil Company is starting Cooper 1-D, SW SW 13-3s-14w, Gibson County, a long-awaited Devonian test in the Griffin pool's north end. Discovery of the Griffin pool led to important discoveries in White County, Illinois.

**Kentucky**

Basin Drilling Company's Washburn 1, 6-P-23, Henderson County, is opening a new area 2 miles west of the Henderson pool. The well pumped 140 barrels of oil from McClosky lime after 4000 gallons of acid at 2703 feet. The yield was made in 17 hours. Aux Vases sand at 2490 feet remains to be tested.

### Former Serviceman Names His Strike "GI Joe Pool"

The heroes of World War II had an oil field in Oklahoma named for them recently when a field discovered by a discharged serviceman in northeastern Oklahoma near Skiatook was named the "GI Joe Pool."

The discovery well was drilled by Virgil Greenwood, Skiatook, Oklahoma, who was discharged from the army in 1945. It was drilled on a 160 acre lease he obtained at an Osage Indian oil lease sale in 1942. Drilled in SE NW NE 13-22n-11e, the well was completed December 31, 1945, for 90 barrels a day from the Tucker sand at 1608-26 feet.

### Advances Business' Idea Of Federal Census Plan

Legislation providing for a census of manufactures, mineral and distribution every five years instead of every ten as at present, has been given the support of the United States Chamber of Commerce but provisions which would permit the census bureau to make such other surveys as it might desire and extend to such studies the criminal and civil penalties for failure to furnish information were strongly opposed.

Appearing recently before the House Census Committee as chamber representative, F. M. Surface, executive assistant to the president of Standard Oil Company (New Jersey) expressed industry fears that the proposed extension of powers would enable the census bureau "to carry out practically unlimited inquiries into the private and economic affairs of our citizens," with mandatory power which would subject them not only to substantial fines but to imprisonment for failure to reply or for wilful false returns. Surface recommended that such studies as the bureau might find desirable be limited to the "more important" segments of our economy and cover only information which is significant of wide application and in the public interest. Where possible, trends of business to be developed in this way should be based on returns from selected firms representative of an industry, and where trade associations compile such data their figures be used, he said. If any penalty provisions are provided for these surveys, they should be in the form of fines with no criminal penalty attached.

### Venezuela Tectonic Map Announced as Completed

The first complete charting of Venezuela, a tectonic map showing location of principal oil-bearing structures, has been completed, according to Professor Walter H. Bucher, Columbia University geologist.

Bucher worked at the invitation of Venezuelan officials and was assisted in the field by Victor M. Lopez, director of the "Servicio Tecnico de Mineria y Geologia." The map also reveals the rock formation of the entire country.

It is expected that the map will be published in this country.

## ☆ Canada

### Mining Groups to Seek Oil In Great Slave Lake Area

In an effort to establish a source of oil nearer the great Yellowknife gold-mining area in Canada's Northwest Territories, 5 leading mining groups have joined for an oil and gas exploration program a few miles south of Fort Hay River, on Great Slave Lake, 125 miles southwest of Yellowknife. Hay River is 450 miles southeast of Norman Wells and 725 miles north of the Turner Valley field of Alberta, sources of Yellowknife's current gasoline and diesel oil.

Hay River Oil Exploration Syndicate is backed by Ventures Ltd., Frobisher Exploration, Giant Yellowknife, Negus Mines and R. J. Jowsey. It holds a 64,000-acre reservation of oil and gas rights from the Dominion government. Geological work has been completed and diamond drill equipment is now at the site, with the initial test well slated to spud by April 1.

Drilling program calls for 4 structure test holes to be carried to the Upper and Middle Devonian contact (around 400 feet), to establish structural interpretation of the anticline indicated; followed by 2 "deep tests" to be carried to the Silurian (around 1000 feet). Three-inch hole will be drilled, with larger production holes to follow if results warrant. Principal objective of the program are the Presqu'ile Dolomites and Pine Point limestones of the Middle Devonian, which are exposed at points along the shores of Great Slave Lake, and are the source of oil seepages along the lake.

N. Hugh C. Fraser, chief geologist for Frobisher and Great Yellowknife mines, states that a source of oil or gasoline closer to Yellowknife than Norman Wells would greatly assits developments in the area, and an exploration program of moderate scope would seem entirely justified. The Devonian rocks south and west of the West End of Great Slave Lake are petroliferous and gently folded. Gasoline at Yellowknife is currently 40.5 cents per gallon plus 3 cents federal tax while diesel oil is 30 cents per gallon, without tax.


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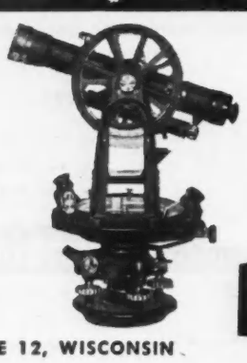

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### ARKANSAS WILDCAT

**Miller County—Failure:** G. Anthony et al's W. A. Smith 2, se 24-15s-26w, Blossom 2220, Paluxy 2640, Glen Rose 3398, massive anhy 3762-3896, Gloyd 4142, James 4340, Pettit porosity 4609, abnd 4610.

### CALIFORNIA WILDCATS

**Kern County—Failures:** Amerada Petroleum Corp.'s Castro 45-12, 12-30s-27e, South Bakersfield area, abnd 7933.

Crawford and Hiles' Tejon 1, 30-11n-19w, Grapevine area, abnd 3006.

**Tulare County—Failures:** Transcal Drilling Co.'s Harris 1, 34-16s-23e, Kingsburg area, abnd 2603.

William C. McDuffie's Bennett 1, 15-18s-23e, Goshen area, abnd 4050.

**Los Angeles County—Failure:** Del Sur Oil Co.'s Del Sur 1, 26-7n-13w, Palmdale area, abnd 2760.

**Ventura County—Failure:** Standard Oil Co.'s Santa Paula Unit 1, 10-4n-20w, Santa Paula area, abnd 11,132.

### COLORADO WILDCAT

**Morgan County—Failure:** Ohio-Tide Water Associated's Williams 7-30, nw sw sw 30-5n-60w, Greasewood Flats area, abnd 7269.

### ILLINOIS WILDCATS

**Champaign County—Failure:** D. K. Roth's Zehr 1, nw nw 7-22n-8e, abnd 320.

**Clay County—Oil Discovery:** Deep Rock Oil Corp.'s Given 1, nw nw se 4-2n-6e, pump 189 bbls day, McCl 2978-84, td 2988.

**Coles County—Failures:** Leland Waggoner et al's Parker 1, ne ne sw 27-11n-7e, abnd 2116.

T. F. Concannon's Cochran 1, ne ne se 23-13n-9e, abnd 2304.

**Lawrence County—Failure:** H. C. Hageman et al's Coen 1, se ne 28-3n-11w, abnd 2060.

**Richland County—Failure:** Pure Oil's Eberhardt "A" 1, sw ne 32-3n-10e, abnd 3250.

**St. Clair County — Failure:** C. W. Young's McCurdy 6, sw sw 29-3s-6w, abnd 2368.

### INDIANA WILDCATS

**Gibson County—Failure:** C. E. Skiles' Stein 1, se sw se 35-1s-12w, abnd 2357.

**Owen County—Failure:** Duncan et al's Miller 1, se nw sw 18-9n-5w, abnd 3500.

### KANSAS WILDCATS

**Barton County — Oil Discovery:** Virginia Drlg.'s Howell 1, se se ne 36-18s-15w, Arb 3494, est 100 bbls oil per day, td 3496.

**Cowley County — Failure:** Fred Manning's Lester 1, nw sw nw 6-33s-3e, Bart sand 3290, abnd 3344.

**Marion County — Failure:** Ward McGinnis' Loveless 2, ne ne sw 2-19s-4e, Miss lime 2313, abnd 2411.

**Saline County—Failure:** C. C. Nelson Drlg.'s Blair 1, nw nw sw 22-16s-3w, Arb 3553, abnd 3564.

**Sedgwick County—Failure:** Beech's McLean 1, nw se ne 1-27s-1e, Burgess 2973, abnd 3025.

### KENTUCKY WILDCAT

**Daviess County—Failure:** M. Collis et al's Smith 1, 14-P-29, abnd 1803.

### SOUTH LOUISIANA WILDCATS

**Iberville Parish—Failure:** A. J. Bankhead's Natalbany 1, 19-9s-2e, St. Gabriel area, abnd 9402.

**Lafayette Parish—Failure:** Raymon & Cockburn's Lafayette Parish School Board 1, 660 n 666.3 e of sw 16-11s-5e, abnd 10,500.

**St. Charles Parish—Oil Discovery:** Union of Calif.'s Milliken & Farwell 1, start e cor 74-12s-19e, go e 4790.36 th n 2875.85 to lcn in 26-12s-20e, pay 8770-86, perf 66 shots 8772-85, flow by heads 25 bbls 39.3-gr oil, 0.5% wtr, 16/64-in, td 9981.

### NORTH LOUISIANA WILDCATS

**LaSalle Parish—Failure:** McElreath & Suggett Co.'s Urania Lbr. Co. 3, c sw se 3-10n-3e, Wilcox 1690, Midway 4054, abnd 4163.

**Ouachita Parish—Failure:** Calif. Co.'s Walter Maxey 1, 32-18n-1e, Wilcox 1212, Midway 1802, Cret 2452, base Chalk 2748, anhy 4103, massive anhy 4304-4513, Travis Peak 5675, Cotton Valley 8050, so in Sugar Creek sd of Rodessa, flow gas and dist fr perf 9233-47, abnd in sw 9299, pb 5030.

### MICHIGAN WILDCATS

**Gladwin County—Failure:** Smith Pet. Co.'s Smith 1, sw sw sw 22-19n-2w, Dundee 3868, abnd 4002.

**Gratiot County—New Gas Horizon in Elba Field:** A. E. Williams' Long 1, nw se se 15-9n-1w, Michigan Stray sand 650, flow 3,400,000 ft, td 700.

**Gratiot County—Failure:** Sohio Pet. Co.'s Joslen 1, se sw se 22-10n-4w, Dundee 3198, abnd 3253.

**Kent County — Failure:** Smith Pet. Co.'s Slayton 1, ne se ne 23-8n-9w, abnd 2529.

**Missaukee County — Failure:** Union and Wright's Weilder 1, nw nw se 34-22n-7w, abnd 1460.

### NEW MEXICO WILDCAT

**Eddy County — Failure:** McKinney & Schrock's State 1, ne se nw 21-20s-28e, elev 3234, abnd 886.

### OKLAHOMA WILDCATS

**McClain County—Failure:** Carter's Hawkins 1, ne ne 34-6n-3w, abnd 9344.

**Okfuskee County—Failure:** Brown & Tomer Drlg. Co.'s Khea 1, nw ne sw 14-10n-9e, Cromwell 3250, abnd 3278.

**Seminole County — Discovery:** Globe O&R Co.'s Davis & Patterson 1, sw sw nw 22-9n-7e, Crom 3430, flowed 130 bbls oil per day, td 3450.

**Seminole County—Failure:** H. H. Wegener's Robertson 1, nw ne sw 31-9n-7e, Cromwell 3400-21, abnd 3430.

**Woodward County — Failure:** Sinclair Prairie's Smith 1, sw sw se 12-23n-22w, abnd 3500.

### WEST TEXAS WILDCATS

**Crockett County—Failure:** Ben Banner et al's Shannon 1, 3922 ft snl, 2970 ft ewl Richard Pillow sur 1, elev 2580 ft, Yates 1435, Soma sand 1630, abnd 2501.

**Crosby County—Failure:** Midland Oil Corp.'s (was Rodgers Bros. Dr. Co.'s) Belding 1, 660 ft snl and 1920 wel W. T. Ry. 4, blk D-15, elev 2614 ft., San Andres 2122, abnd 3203.

**Winkler County—Failure:** R. R. Herrell et al's Burton-Lingo Lumber Co.-Humble 1, 2650 ft snl and 660 ewl PSL 27, blk 27, elev 2863, Delaware lime 5084, sand 5150, abnd 5156.

**Yoakum County — Failure:** Hunt Oil Co.'s Graham 1, c nw nw Sect. 328, blk D, J. H. Gibson sur, elev 3642 ft, anhydrite 2440, Yates

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|---|---|
| 1—Power Pump — 4 x 6 Fairbanks-Morse Oil Bath c/w Allis-Chalmers —4 cyl. Type E—52 H.P. Motor—steel skids | $1,050.00 |
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**FOR SALE**

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■ Released naval officer—graduate Petroleum Engineer with 5 years oil field experience, desires contact with concern engaged in oil field work. Address: Box 97, c/o The Oil Weekly Houston, Texas.

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■ WANTED: Experienced party chief for seismograph crew. Good salary and bonus. Give all details of education and experience in reply. All replies kept confidential. Address: Box 3, c/o The Oil Weekly, Houston, Texas.

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3210, brown lime 4180, San Andres 4590, abnd 5351.

### WEST TEXAS WILDCAT DEEPENED

**Lubbock County—Failure:** Kerlyn-McGee Oil Interests' Fetter 1, c nw nw C.&M. 17, blk CB, otd 6500, elev 3321, brown lime 3820, San Andres 3860, abnd 6889.

### WEST CENTRAL TEXAS WILDCATS

**Stephens County—Failure:** F. Kirk Johnson and Roeser-Pendleton, Inc.'s Phillips 1, 330 ft nsl and 400 wel of w½ Sect. 69, Blind Asylum Lands, elev 1313, Bend 3561, Mississippi 4275, Ellenburger 4290, abnd 4318.

**Taylor County—Oil Discovery:** West Central Dr. Co.-J. C. Karcher's J. R. Ingram 1, 330 ft wel and 970 nsl Labor 18, League 146, Grimes CSL sur, elev 1898 ft, pumped 53 bbls 40-gr and 99 bbls water, acidized 25 gals through Upper Hope lime perf 2741-42, td 3110.

**Taylor County — Failure:** Alder Oil Co.'s Hughes Est. 1, 450 ft snl and 1130 ft ewl of 112-acre lse, or 259 ft w and 450 n of nec T&P Ry. 8, blk 9, but in Burr & Caswell sur, blk 4, elev 1906 ft, Flippen 2699 ft, Saddle Creek 2650 to 2671 ft, abnd 2900.

### NORTH TEXAS WILDCATS

**Archer County—Failure:** Louisiana Land & Exploration Co.'s Lyles 1, 2208 ft snl and 1869 ewl Sect. 7, Hooper & Wade sur, A-234, elev 1153 ft, Palo Pinto 3404, Bend 4783, Mississippi 5052, abnd 5222½.

**Clay County—Failure:** Nu-Enamel Oil Op. Co.'s Hapgood-Texaco 1, 1500 ft snl and 467 wel blk 83, Marion CSL sur, A-308, elev 945, Bend 6115, Barnett shale 6323, abnd 7023.

**Cooke County—Failure:** Fred Snuggs-McElreath & Suggett's Henderson-Sun 1, 330 ft out sec blk 51, Fannin CSL sur, elev 810, Winger sand 5440, Simpson 5563, abnd 5601½.

**Montague County—Failures** A. V. Grant et al's Durham 1, 330 ft e and 500 n of sec blk 91, Kaufman CSL, but in Francis Escobar sur A-216, elev 881 ft, abnd 4205.

Nu-Enamel Oil Op. Co.'s Admire 1, 330 ft out swc of 80-acre tract and G. W. Fisher sur A-1223, elev 990 ft, Bend 5050, conglomerate 5085, Simpson 5625, Ellenburger 5895, abnd 6213.

**Throckmorton County — Failures:** Martin Prop., Inc.'s Mathews 1, 150 ft ewl and 1686 nsl of north 93 acres of blk 29, M. V. Cunningham-Comanche sur A-1419, abnd 911.

J. W. Carter et al's Kunkel 1, 5250 ft from ne and 950 from nw of Sect. 562, TE&L Co. sur, elev 1214 ft, abnd 720.

**Wichita County—Failures:** Wayne H. Hammon et al's Fassett-Tuttle 1-B, 3550 ft e and 1787 s of sec J. A. Scott sur A-303, but in blk 37, Cherokee CSL sur, elev 969 ft, abnd 6195.

National Associated Pet. Co.'s Proud 1, 230 ft snl and 990 wel blk 189, Waggoner Colony Lands, elev 1154 ft, Canyon 2933, abnd 4570.

### NORTH TEXAS NEW PAY DISCOVERY

**Wilbarger County—National Field Intermediate Pay:** National Associated Pet. Co.'s Sam Kelly 5-B, sw nw se H&TC Ry. 36, blk 13, elev 1241 ft, Canyon 3219, Ellenburger 4875, flowed 456 bbls 38-gr via ½-in, acidized 2000 gals Strawn (KMA) perf 4306-18, td 4895, pb to 4340.

### EAST TEXAS WILDCATS

**Limestone County — Failure:** Woodbine Oil Co.'s Noel 1, 600 ft ewl and 400 ne lines 80-acre lease, or 7325 from se and 13,000 ft from sw lines M. R. Palacious sur, abnd in shale 4262.

**Rains County — Failure:** Sohio Pet. Co.'s Butler 1, 230 ft wel and 1100 nsl of 81-acre tract, E. Gideons sur, elev 392, Navarro 1206, Pecan 2181-2341, Gober 2883, Austin 3480-3782, Woodbine 4266, Georgetown 5046, Ft. Worth 5615, Goodland 6088 to 6150, Paluxy 6185, Glen Rose 6500, top massive anhydrite 7500, base Bacon 7665, Travis Peak 8275, abnd 8505.

### SOUTH CENTRAL TEXAS WILDCATS

**Atascosa County — Distillate Discovery:** Quintana Pet. Corp.'s C. Muil 1, (OWDD) 2714 fr nel 5000 fr sel 1589-acre lease, J. C. Mattison sur 467, U. Edward li 8836, acidized 100 ft open hole below csg set at 8836, flow 100 bbls 48-gr cond, 3,500,000 gas, ¼-in, tp 2000 lbs, otd 8965, td 9105.

**Atascosa County — Failure:** Quintana Pet. Co.'s Guy H. Smith 1, 330 fr nw&swl Wm. Waggoner sur 201, 6750 s of Muil 1, gas-cond disc, Reklaw sand 2000-2100, abnd 6065.

**Bastrop County—Failure:** Joe O. Williams et al's A. E. Rosanky 1, 330 fr s&wl 1161-acre lease, Musgrove Evans sur, abnd 1965.

**Milam County—Failure:** Holcombe & Howard Oil Co.'s J. L. Byrd 1, 1350 fr nwl 1084 fr swl 189.1-acre tract, J. J. Acosta Gr. abnd in chalk 1133.

### SOUTHWEST TEXAS WILDCATS

**Duval County—Failures:** Sawnie Robertson's E. R. Hagist 1, 990 e of wl 1351.6 s of nl BS&F sur 124, 990 n of sl 224.23-acre lease, Mirando 2451-97 ft, Pettus 2605-35, abnd 2635.

Rowan & Hope's Duwel Co. 1, 330 sw of nel 940 se of nwl J. Poitevent sur 549 and 240-acre lease, abnd 2506.

### LOWER TEXAS COAST NEW PAY TEST

**Nueces County—Saxet Oil Discovery:** Richardson Pet. Co.'s L. G. Talbert 1, 467 s of nl 467 w of el 314.5-acre Russell Farm Trs, pay 6635 ft, perf 12 shots 6643-45 ft, flow 164.39 bbls 38.6-gr oil, 7/64-in, tp 925 lbs, cp 1050 lbs, td 7495.

### UPPER TEXAS COAST WILDCAT

**Jefferson County—Failure:** Sun's Broussard & Hebert 15, 5000 fr nl 10,086.4-acre lease, 3661 fr wl 3300 fr el Hotchkiss Lge, 8266 ne Well 6, abnd 9891.

### WYOMING WILDCAT

**Natrona County—Failure:** Continental's F. Allen 1, ne 13-29n-82w, Mellum Dome area, abnd 4420.

### WESTERN CANADA WILDCAT

**Central Alberta Plains — Kinsella Failure:** Imperial Oil Ltd.'s Kinsella No. 7, lsd 7 22-49-10w4th, abnd 2025.

## WILDCAT STARTS

### CALIFORNIA

**Kern County:** Independent Expl. Co.'s Temblor 2, 17-29s-21e, Cymric area, lcn.

**San Louis Obispo County:** Richfield Oil Corp.'s Cuyama Unit 1, 18-10n-24w, Cuyama area, lcn.

### ILLINOIS

**Macoupin County:** J. Q. Gill's Taylor 1, nw ne se 31-9n-8w, lcn.

**Mason County:** Keith Railroad Equip. Co.'s Wilson 1, ne ne ne 19-21n-5w, drlg.

**White County:** Bristol Hackbush et al's Dosher 1, nw ne ne 27-4s-10e, lcn.

**Floyd County:** Chenault et al's Scarf 1, sw se 28-1s-5e, lcn.

**Gibson County:** Chester's Hunt 1, se ne 14-1s-10w, lcn.

**Posey County:** R. E. Johnston et al's Lamar 1, sw ne ne 27-5s-14w, lcn.

### KANSAS

**Butler County:** E. H. Adair's Brown 1, nw se ne 20-27s-7e, mim.

**Cowley County:** Earl Wakefield et al's Hann 1, nw nw nw 22-31s-3e, lcn.

**Ellsworth County:** M. M. Price et al's Novotny 1, c s½ sw ne 32-16s-10w, rur.

**Sumner County:** Ashland Oil and Bartlett's James 1, nw sw ne 36-32s-2e, drlg 1200 ft.

E. S. Adkins' Totten 1, sw sw sw 10-33s-2e, rur.

### KENTUCKY

**McLean County:** Miller & Shiarella's Ohio Valley 1, 9-M-27, drlg.

### SOUTH LOUISIANA

**Livingston Parish:** A. J. Bankhead-Danciger O&R Co.'s E. L. Hood 1, 37-7s-3e, Denham Springs area, 9500-ft test.

### NORTH LOUISIANA

**De Soto Parish:** Chas. C. Lowery's Mary R. Crow 1, 15-11n-10w, lcn.

### MICHIGAN

**Barry County:** Oil Producers, Inc.'s Bowerman 1, ne nw se 1-3n-10w, lcn.

**Newaygo County:** Cook, Jones and Haskin's Klever 1, ne se ne 35-11n-13w, rig.

### NEW MEXICO

**De Baca County:** Francisco et al's Marshall 1, sw sw ne 7-3n-26e, 450-ft gas test, dr 105 ft.

**Roosevelt County:** W. J. Peterman et al's Taylor 3, 1680 ft nsl and 1320 ft ewl 22-2s-30e, 600-ft test, dr 60 ft.

### OKLAHOMA

**Beaver County:** H. L. Hunt's Light 1, nw sw se 9-6n-ecm, lcn.

**Beckham County:** Ray Stephens' Pennington 1, nw nw nw 27-8n-25w, rur.

**Caddo County:** Four States Oil Co.'s Brewington 1, ne ne nw 18-6n-13w, drlg 620 ft.

**Garvin County:** Pecox Valley Mill Co.'s Fee 1, ne ne se 7-3n-1e, drlg.

### WEST TEXAS

**Ector County:** John W. Murchison et al's T. P. Land Trust-Texaco 1, c se nw T&P Ry. 7, blk 45, T-2-S, 3¾ mi s by w of TXL-Devonian field, lcn 8500-ft test.

### WEST TEXAS WILDCAT DEEPENING

**Winkler County:** H. L. Hunt (was Gulf's) E. R. Hill 1, 440 ft out swc se PSL 9, blk B-11, elev 2809 ft, brown lime 2415, otd 4170, co to dd to base of Permian.

### WEST CENTRAL TEXAS

**Coleman County:** Fulwiler & Hughes Dr. Co.'s T. Templeton 1, 450 ft snl and 330 ft ewl HT&B Ry. 8, blk 1, lcn 3800-ft test.

**Jones County:** Geochemical Surveys, Inc. et al's D. H. Jeffries-Humble 1, 3000 ft snl and 467 ft from m/w/e line of T&P Ry. 4, blk 17, lcn 3000-ft cable test.

Oscar Donley et al's Roy E. Pritchard 1, 330 ft out of nec of 75-acre lease and T&P Ry. 24, blk 15, lcn 2300-ft rotary test.

**Runnels County:** Homer W. Snowden et al's E. C. Grindstaff 1, 330 ft out nec of 122-acre tract, or 330 ft nw and 1100 ft sw of north corner of H. Allford sur 334, but in E. W. Bull sur 433, 5500-ft rotary test, spud.

### NORTH TEXAS

**Archer County:** Bridwell Oil Co.'s L. F. Wilson 2-J, 1320 ft nsl and 1500 ft ewl S. P. Ry. Co. sect 1, A-412, lcn 2000-ft test.

Geo. W. Cooper et al's Ben F. Jones 1, 990 ft nsl and 2250 ft wel of T. Freeman sur A-134, lcn 5200-ft Ellenburger test.

S. D. Johnson et al's Fee 1, 330 ft out nwc blk 126 and Abner Nail sur A-325, lcn 4500-ft test.

**Cooke County:** R. B. Hollandsworth et al's Joe Tischler 1, 3150 ft snl and 2836 ft wel of Nathan Barnett sur A-124, or 150 ft ewl and 750 ft nsl of 100-acre lease, lcn 1100-ft rotary test.

**Throckmorton County:** Eastland Oil Co.'s Mathews 1, 2310 ft ewl and 330 ft snl E. T. Ry. sect 228, lcn.

**Young County:** Davis Investment Co.'s S. A. Morris 2, 1080 ft out swc sect 254, TE&L Co. sur, lcn 700-ft cable test.

### EAST TEXAS

**Rains County:** M. N. Massad et al's J. D. Whittle 1, 330 ft out nwc of 81-acre lease and Levi Welch sur, mi n of Point, mim for 4000-ft Woodbine test.

**Van Zandt County:** Delta Dr. Co. et al's S. A. Martin 1, 867 ft wel and 1000 ft nsl of A. T. Flowers sur, A-274, 4 mi s Tundra, lcn for Travis Peak test.

### SOUTH CENTRAL TEXAS

**Milam County:** R. L. Holcombe et al's J. L. Byrd 2, 1350 fr nwl 151 fr swl 189.1-acre lease, J. J. Acosta Gr, 468 ne of Byrd 1 dry hole, pump 2 bbls clean oil, no wtr, waiting on storage.

### SOUTHWEST TEXAS

**Duval County:** Cox & Hamon's Albert Martin 1, 347 fr nwl 313 fr nel lot 208, Myrtle E. Hale sbdn, Servando Benavides 5332.5-acre tr on 977.4-acre lease, Los Angeles de Ariba Gr, 3200-ft test.

**Starr County:** Baldridge & King's Yturria Ld. & Livestock Co. et al 1-A, 467 w fr el sh 320 467 fr el 2333 fr nl 160-acre lease, e½ Porc 100, se Garcia, sw Yturria flds, ru 6000-ft test.

**Webb County:** Texas Co.'s Daniel Adami 1, 1650 n&wl H&GN sur 4 on 1810-acre lease, H&GN sur 2 & 4, BS&F sur 4, 1500-ft test.

Texas Co.'s Griffin Watkins Est. 1, 1650 fr nl 990 fr el 1650 fr wl se¼ blk 20, De Lange Eiser Dev. Co. sbdn on 509-ac lse, San Casimiro y de Las Fuentes sur, 1200-ft test.

### LOWER TEXAS COAST

**Jackson County:** Humble's A. A. Egge 2-C, 660 fr n&el Morris & Cummings sur 25, 5705 fr el 660 fr nl 1471.85-acre "C" lease, sw extension test in Harmon sector Ganado-Mayo-Harmon-W. Mauritz area, 13,000-ft test.

**Live Oak County:** Bridwell Oil Co.'s R. W. Duncan 1, 467 fr nw&nel 826.6-acre lease, Live Oak Co. Sch. Ld. sur, ru 5000-ft test.

**San Patricio County:** Sullivan & Garnett's D. Zwieg 1, 330 fr ne&nwl blk 1 sect 53 on 434.7-acre lease, 8½ mi n of Gregory, mir 9000-ft test.

### UPPER TEXAS COAST

**Chambers County:** Humble's Annie Frankland et al 1, 467 fr wl 467 nw at ra fr sel 52-acre tract on 561-acre lease, 467 fr wl Samuel Mather sur, blk 13, 10,000-ft test.

**Fayette County:** Amerada's G. L. Brown, Jr. et al 1, 1800 fr nl 800 fr wl 568.6-acre tract, Jacob Stiffler sur, nw Arnim fld, 5000-ft test.

**Ft. Bend County:** John Blaffer-Cecil Hagen's E. H. Mahlman 1-B, 2550 fr sel 2450 fr swl BBB&C sur, 50-acre lease, nw flk Big Crk fld, 6500-ft test.

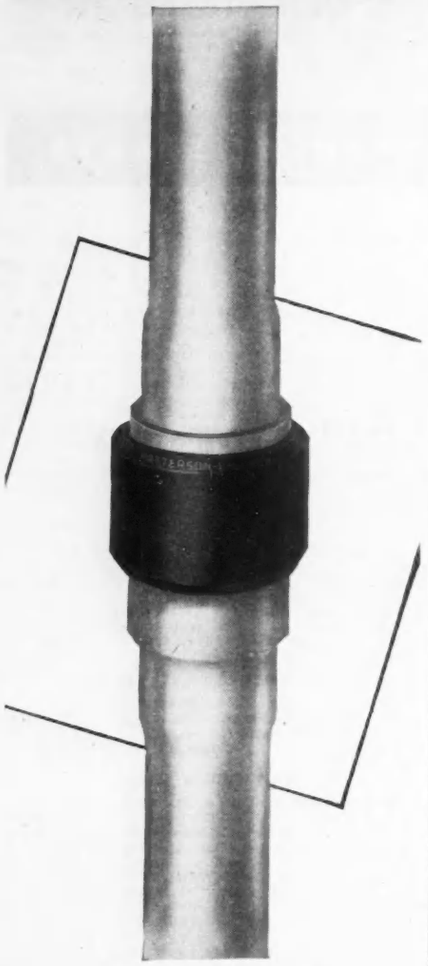
### WESTERN CANADA

**Central Alberta Plains—Kinsella:** Imperial Oil Ltd.'s Kinsella 9, lsd 6 16-46-9w4th, coordinates 1967 ft n 640 ft w sw¼ section, ru.

## *Texas Field Named*

The name "Southwest Burnell" has been given the field discovered by Blanco & Buchanan's C. A. Henderson 1 in the R. C. Ballard Survey, Abstract A-107, Bee County, Texas, as announced by Don O. Chapell, chairman, Oil Field Nomenclature Committee of the South Texas Geological Society.

"Best Bet Yet"



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These oil-proof, insulating, wear-resistant, plastic tubing protectors are an integral part of the tubing collar. Made in all sizes, they prevent the metal-to-metal contact that causes many expensive "wet" jobs in pumping wells. Without this contact, the collars do not wear holes in the casing.

*See Composite Catalog*

**Patterson-Ballagh TUBING PROTECTOR**

LOS ANGELES HOUSTON 10 NEW YORK 6

## SQUEAKS from the BULL WHEEL

### On His Honor

"Can I trust you?" said the little girl to the policeman.

"Sure, honey."

"Okay, then, button my panties."

### Polite Epithet

Two cars collided and the drivers jumped out to inspect the damage. "It's my fault," said one, "but there's nothing much I can do about it. I don't have a dime's worth of insurance and I'm broke and out of work. However, if it will make you feel any better you can call me any and as many vile names as you like."

Said the other: "I'm a very pious man and my vocabulary contains absolutely no profanity or strong words. I have only this to say. I do hope that when you go home tonight your mother runs out from under the porch, barks ferociously, and bites you on the leg."

### Woman's Way Up

"Are you a self-made man, Mr. Gotbucks?"

"Dope, I'm the revised work of a wife and three daughters."

### Time Marches On

1896: "Shall we join the ladies?"

1946: "Where the hell's my woman?"

### Acrobatic Angel

A woman approached the pearly gates and inquired of Saint Peter: "Do you know if my husband is here? His name is Smith."

"Be more specific. We have lots of Smiths here."

"His first name is Joe."

"Come again, lady. Lotsa those, too."

"Well, before he died he said that if I ever looked at another man he'd turn over in his grave."

"Oh, you mean Pinwheel Smith."

### Pup's Punishment

"Your honor, the bull pup has chewed up the Bible."

"Well, have the witness kiss the pup—we can't wait around all day for another Bible."

### Small Beginnings

"Any big men born around here?"

"Nope. Best we can do is babies."

### Too Rank

Accompanied by a driver, an American major in a motor vehicle was stopped by a sentry.

"Who goes there?"

"One American Major, a one-ton truck of fertilizer and a buck private."

They were allowed to proceed but at every cross roads they went through the same formula.

After a time the driver asked if they were likely to be stopped again.

"I guess so."

"Well, Major, the next time we are stopped would you mind giving me priority over the fertilizer?"

### Poet's Nook

A sultan at odds with his harem
Thought of a way he could scarem.
He caught a mouse, set it loose in the house,
And started the first harem scarem.

### Encore

She doesn't use the beauty salves
But won't refuse to show her calves.
You ask her name? Well, that's a wow—
She's not a gal; she's just a cow.

### Encore

All the facts of life conspire
To call the optimist a liar.

### Wooden You Know It!

A fellow in the lumber business has a girl with a willowy figure, hazel eyes, cherry lips, chestnut hair, and a voice of finest timbre. And boy, how he pines for her.

### Well Advised

"Say! Who told you that you could neglect your office duties just because I kiss you every now and then?"

"My lawyer."

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**90-UL ECOLITE**

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**CHEMICAL ANALYSIS SURVEYS**
**3110 Holmes Street Kansas City, Mo.**

**G. E. LINDLEY** has been named a director and vice president of Richmond Petroleum Company of California and will be in charge of all marine operations. Richmond, a subsidiary of Standard Oil Company of California, is the management company for operations in Venezuela and Colombia.

• • •

**B. F. DAILY,** West Texas district senior inspector for Shell Pipe Line Corporation, has been promoted to district construction supervisor, succeeding **E. O. KEMPER,** resigned.

• • •

**LEO E. JONES,** general credit manager of Arkansas Fuel Oil Company, Shreveport, has been elected to the board of governors of the petroleum division, National Association of Credit Men.

• • •

**MIKE MARTIN,** for the past two years a driller for The Atlantic Refining Company in Haiti, has returned to his home in McAllen, Tex.

• • •

**OAKEL P. BULLOCK,** Phillips Petroleum Company, Bartlesville, Okla., spoke before the Engineers Club of Tulsa on "Water and Sanitary Conditions of Iran," drawing on his experiences as a major in the U. S. Army Engineers during the war.

• • •

**F. M. TYLER,** for the past three years senior materials specialist in PAW district 3, has organized F. M. Tyler and Company as a specialized oil equipment distributing organization with headquarters at 2930 Pease Avenue, Houston. The company will maintain a staff of sales engineers covering Texas, Louisiana, Mississippi, Alabama, Arkansas, Oklahoma and New Mexico.

• • •

**MacLEAN HOUSTON,** of Warren, Penn. was reelected chairman of the Technical Advisory Committee of the Pennsylvania Grade Crude Oil Association, and **G. M. KIRKWOOD,** Karnes City, Penn., was reelected vice chairman. Association headquarters is at Oil City, Penn.

**E. M. BUTTERWORTH** has been elected president of American Overseas Petroleum Company, succeeding **E. A. SKINNER,** who has returned to Standard Oil Company of California as a member of Vice president **J. H. MacGAREGILL'S** staff. Butterworth joined Standard of California as a geologist in 1917 and in 1925 became district geologist for Standard in Los Angeles. In 1936 he became assistant manager of the foreign producing department, with headquarters in San Francisco. During the war, Butterworth spent two years in the East as a special representative for PAW. In July, 1944, he became a vice president of American Overseas Petroleum Company at the time this company was formed. American Overseas manages foreign exploration and development activities of companies jointly owned by Standard of California and The Texas Company, with the exception of Arabian and Bahrein interests.

E. M. Butterworth

• • •

**PLINY del VALLE** has been named superintendent of the land department, Southern region, of Continental Oil Company with headquarters in Houston succeeding **H. D. HENDERSON,** who resigned to go with Sohio Petroleum Company. **CLAUDE WILLIAMS,** formerly head of Continental's title department in the Houston office, has been named superintendent-unitization in the land department replacing **J. H. GRAHAM** who has been transferred to the production department, Continental's title department in Houston has been divided into two divisions with **FRANK JOHNSON** head of the Texas division and **AL P. KUEHN** in charge of the Louisiana division.

**ROY M. MAYS** has returned to the Pure Oil Company after three years with the FBI and has been appointed chief scout of the southwest producing division, with headquarters in Fort Worth. He entered the land and rental department of Pure in 1937. He succeeds **JAMES F. BRANNAN,** who has been transferred to Wichita Falls, Tex., as district landman for the North Texas area.

• • •

**J. B. GOODRICH,** former superintendent of production of the Lake Charles district for Magnolia Petroleum Company, has been named production superintendent of the division office in Houston. He succeeds **M. V. C. BRADLEY,** division superintendent since January, 1945, who has been promoted to assistant production superintendent of Magnolia with headquarters in Dallas.

• • •

**ROBERT L. FOREE** and **W. H. SANFORD,** Dallas, and **GEORGE THOMAS,** Abilene, Tex., have incorporated the Central Well Servicing Company. Headquarters are in the Continental building, Dallas.

• • •

**W. E. STEWART** of Tyler, Tex., **A. E. STEWART** of Shreveport and **H. G. LEWIS** of Longview, Tex., have incorporated the L. & S. Drilling Company, Inc., with headquarters in the Peoples National Bank building, Tyler.

• • •

**DR. R. J. PFISTER,** laboratory chief, outlined objectives of the Pennsylvania Grade Crude Oil Association's production research program at a recent Warren, Pa., meeting. His assistants **DR. J. N. BRESTON** and **DR. H. C. LAWTON,** discussed selective plugging materials and the effect of waters on clay in the oil sands.

• • •

**MISS A. VIOLA SMITH** has sailed for Shanghai to assume the post of China representative for the China-America Council of Commerce and Industry. Her departure is preparatory to the opening of trade relations with China. Miss Smith was former trade commissioner and consul in Shanghai and spent more than 20 years in China as an official of the U. S. Commerce and State departments.

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# MEN IN THE INDUSTRY NEWS

**H. GOTTWALD,** foreign sales executive of Rockwell International Company, New York, has returned from market survey of the Venezuelan oil fields. Gottwald, a member of the Pittsburgh Equitable Meter Company sales organization for 17 years, joined Rockwell shortly after it was organized in mid-1945 to handle export of certain products, including the regulating equipment of Pittsburgh Equitable Meter Division, lubricated plug valves of Nordstrom Valve Company, cast and forged steel valves of Edward Valves, Inc., and Woodworking machinery of the Crescent Machine Company.

H. Gottwald

* * *

**M. A. GRIZZLE,** California petroleum engineer, has transferred from Bethlehem Pacific Coast Steel Corporation to Petroleum Equipment Company. His transfer will permit him to devote his efforts more exclusively to the representation of Petro-Chem Development Company direct fired furnaces and other specialized equipment.

* * *

**E. J. ROBISHAW** of A-1 Bit & Tool Company, Houston, spoke before the Shreveport Geological Society February 20 on "A-1 Sidewalk Rotary Type Core Barrel."

* * *

**REX STEGALL** and **A. E. McCUBBIN,** both of Kilgore, Tex., have formed the Rexall Drilling Company, Inc., with capital stock of $10,000.

* * *

**ROXIE WRIGHT, J. A. GRAY** and **H. MERLYN CHRISTIE,** all of Houston, have incorporated the Rexoil Drilling Company, Inc.

* * *

**ROGER GUTHRIE, WALTER E. BOYD** and **GEORGE MURRIN,** all of Houston, have organized the Southwestern Independent Gas Pipe Line Company, with headquarters in the Commerce building, Houston.

* * *

**ALEXANDER BLACK,** formerly of the Pacific Lighting Corporation of Los Angeles and recently released by the Army Air Forces as lieutenant colonel after 45 months in the service, has joined the sales department of Solar Aircraft Company. He will work with the petroleum industry branch of Solar Sales Department.

* * *

**W. A. WILSON** has returned to Web Wilson Oil Tools after 3½ years in the Ordnance Department of the Army. He will be in charge of new development work, engineering, design and manufacturing.

* * *

**A. J. STETTER** has been appointed a vice president of Earle M. Jorgensen Company, Houston. He is also district manager for the Houston territory.

* * *

**TOM L. TURNER,** who recently resigned as manager of the Houston branch of American Iron & Machine Works, has established offices in the Neils Esperson Building, Housotn, to serve as a manufacturer's agent. He has been associated with the drilling, producing and pipe line phases of the oil industry for 16 years. His agency represents the Gorman-Rupp Company, Mansfield, Ohio; King Oil Tools, Houston; General Welding Works, Houston; and Oil Field Machine and Supply Company, Houston.

* * *

**RUDYARD C. McKEE,** formerly advertising manager of Standard Oil Company (Indiana) has joined the firm of Needham, Louis and Brorby, Inc., Chicago, as an accountant executive. McKee served 4½ years in the U. S. Navy in both the European and Pacific theaters, was executive officer of the training division which supervised photographic history of naval aviation and produced the motion picture, "The Fighting Lady."

* * *

**THAD RANDOLPH** and **JACK LONG,** recently discharged from the Navy, are now associated with Oil Base, Inc., and will be stationed in the Mid-Continent Area with headquarters in Tulsa.

**JOHN W. WOODS,** fieldman from the Tallahassee, Fla., area, has been transferred to the Halliburton Oil Well Cementing Company office in the Philtower Building, Tulsa. Woods, who has been with Halliburton on the Gulf Coast and in Florida, will act as district representative, being well versed in the many phases of Howco well-servicing which include acidizing, cementing, plastics, and oil base muds.

John W. Woods

* * *

**W. T. HOLLIDAY,** president of the Standard Oil Company of Ohio, has been elected to the board of directors of the Brand Names Research Foundation.

* * *

**MILTON H. ROTHS,** recently discharged by the Navy, has been named manager of the newly formed Petroleum and Chemical Division of Brown & Root, Inc. He served in the Navy from the time of his graduation in 1924, until 1926. He has had 16 years of experience in design, engineering, fabrication and construction of process plants. **HOWARD M. ANDERSON,** formerly assistant chief engineer of the Fluor Corporation, Ltd., and 20-year veteran of the construction field, has been named engineer for the newly formed division.

* * *

**WILLIAM J. DOBBS,** president of Dobbs Oil & Gas Company, announced the opening of the company's Anadarko Royalty Corporation for operations in the Anadarko Basin of Oklahoma with $250,000 charter. He has been in the oil business since 1918, having had several producing wells in the Burkburnett and Ranger fields, and has drilled numerous wells in other fields since that time.

* * *

**ALEX J. DIEPENBROCK,** production and petroleum engineer, has joined **LUIS E. KEMNITZER** and **L. W. RICHARDS,** geologists of Los Angeles. He served overseas in the Navy for three years, having been in Iceland, Espiritu Santo in the New Hebrides and Saipan. Diepenbrock was manager of production for The Petrol Corporation for several years.

* * *

**MAX L. MURDOCK** has returned to Allis-Chalmers Manufacturing Company, Milwaukee, as assistant manager of the centrifugal pump section at the firm's Norwood, O., works. Murdock, who served the last three years on the escort carrier "Altamaha," came to Allis-Chalmers in 1936 from the University of California.

* * *

W. M. Ware

W. E. Barfield

**W. E. BARFIELD** has been appointed district representative of S. M. Jones Company for the Tulsa area. He was formerly safety engineer for Sinclair Pairie Oil Company, and prior to that connection was in the purchasing department of both British American Oil Company and Stanolind Oil & Gas Company. **W. M. WARE** has been transferred from the Tulsa district to Shreveport and will cover northern Louisiana, Arkansas, Mississippi, and Alabama. He was employed by The Texas Pipe Line Company before becoming associated with S. M. Jones Company.

**DON KNEER,** former assistant to Vice president W. Blackie, Caterpillar Tractor Company, has assumed new duties as office manager for William K. Holt Machinery Company, "Caterpillar" distributor at San Antonio. Kneer served 18 years with "Caterpillar" before transferring to the Texas position. He joined the company in 1928 as a credit clerk in the treasury department and in ensuing years served in both the domestic and export division before becoming export credit manager. In 1944 he was transferred to the company's special war-time office in Berwick, Pa., as assistant manager and later became manager of that office. He returned as assistant to Blackie in November of 1945.

Don Kneer

* * *

**CARL E. DREHER,** regional director of Brazil for the Westinghouse Electric International Company, has been awarded the Order of Merit, highest Company award, for distinguished service in the foreign field. The award, a bronze medallion inscribed with a silver "W," was accompanied by a citation "for outstanding performance in the establishment and expansion of the Company's business performance in foreign territory under exceptional circumstances . . . "

* * *

**FRANK G. OSWALD** has been appointed assistant sales director of the synthetics department of Hercules Powder Company. The department is establishing a new group to handle the market development of new products, with **MALCOLM C. MOORE** as manager, and **J. GLENN LITTLE,** assistant manager. Others assigned to the group are **PAUL JOHNSTONE** and **JAMES MONKMAN.**

* * *

**E. G. PRICE** has been appointed general superintendent of National Works, National Tube Company, at McKeesport, Pa.

* * *

**CHARLES T. HAPGOOD** has succeeded **JOHN O'H. ANDERSON** as manager of sales, tubular products, Jones & Laughlin Steel Corporation.

* * *

**FRANK COOTER,** landman for the Cities Service Oil Company, has been transferred from Jackson, Miss., to Wichita Falls, where he will have charge of lease operations in North Texas.

* * *

**B. W. STEVENS** has been appointed agent for Web Wilson Oil Tools, of Los Angeles, covering West Texas, Texas Panhandle and the New Mexico territories. He will be stationed at Midland, Tex.

## Deaths

**JOHN E. FARRELL,** 54, Fort Worth oil operator and civic leader, died February 27 of a heart attack in a Fort Worth hospital. He was a native of England, and lived in Canada prior to making his home in Texas. He was a landman for the Marland Oil Company of Texas, then in 1929 began operating as an independent that led to his co-ownership of the discovery well in the Longview sector of the East Texas field.

* * *

**J. F. GOFORTH,** 30, Wichita Falls, Tex., drilling contractor and producer, was killed February 25 when he came in contact with an electric transmission line while at work near Holliday, Tex. **RAYMOND L. GOFORTH,** his brother, was injured in the same accident.

* * *

**CHARLES G. LASKEY,** 67, Shreveport independent oil operator, died February 22 in New Orleans. He was active in Louisiana oil and gas development since 1917, when he and **GEORGE BELCHIC** laid the first pipe line through the northeast part of the state. In 1920 he and Belchic pioneered development of the Pine Island and Bull Bayou fields. Later he organized the Northwest Louisiana Gas Company and the People's Gas and Fuel Company. In 1928 he took over the Southwest Gas Company in Oklahoma and Texas, which eventually merged with the Louisiana companies to form the Southwest Natural Gas Company, whose board he headed until his retirement in 1944. Laskey was active in The API and IPAA.

* * *

**J. HOWARD COURTNER,** 40, Tulsa, assistant general manager of Dowell Incorporated, died February 22 in Chicago. A native of Oklahoma, Courtner joined Dowell in 1934 and was treating engineer and station manager at Hobbs, N. M., district manager at Salem, Ill., and in January, 1945, was transferred to Tulsa as assistant general manager in the general offices of the organization.

**L. V. SURTEES,** 52, eastern division manager of Mid-Continent Petroleum Corporation, died February 26, in Terre Haute, Ind. Surtees had been with Mid-Continent since 1922 when he went to work in the West Tulsa refinery. He had recently spent some time in Tulsa assisting in the work of the advertising and promotion department and the stations operations department which had been in charge of the late **A. P. McGRATH,** who died recently.

* * *

**CHARLES ROSS DUTTON,** pioneer oil man, died February 23 at Corpus Christi, Tex. following a heart attack. He had been a producer, contractor and lease man at various times in Ohio, West Virginia, Oklahoma, Texas and Mexico. He was 69.


Leak Insurance

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DOUBLE SEATS make Goode Unions your best insurance against leaks in flow lines, well head, blowout preventer and pump manifolds, steam lines and other installations requiring pressure-tight connections. Each seat is individually capable of sealing against the rated test pressure of the union—should one seat become damaged during installation, the other will safely hold recommended pressures.

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GOODE EQUIPMENT CO., Inc.

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HOUSTON, TEXAS

## The Wagner Act

More people are thinking about legislation affecting labor and capital than ever before. Strikes that have plagued the country have brought many to the conclusion that more stringent laws governing labor organizations are necessary. Congress seems inclined to this view also, and some kind of revision in present statutes will probably be put into effect.

Thus it is appropriate that "The Wagner Act: After Ten Years," has been published and released at this time. Sen. Robert F. Wagner, author of the National Labor Relations Act characterizes the act as the "most controversial law of our time," and certainly it has played an important part in the labor situation in the United States since its passage in 1935.

This law is lauded and praised by many people and just as heartily despised and condemned by others.

The book is a compilation of opinions bringing together the frank commentary of 11 experienced national figures on the National Labor Relations Act. It has been edited by Louis G. Silverberg, director of information for the National Labor Relations Board, and reveals for the first time a "close-up" view of the law's foundations, its early struggles, its impact on workers and management, plus an analysis of its strengths and weaknesses as seen by experienced observers on both sides.

Contributors to the volume include: Lee H. Hill, formerly vice president of Allis-Chalmers Company, who prescribes the remedies for what he terms "lack of balance" in the Act; William Leiserson, former board members, who tells how the law could be strengthened; Paul R. Hutchings, who surveys the measure's effect on trade unions; Charles Fahy, former U. S. Solicitor General, who catches a "living interpretation" of the act as reflected by court decisions; Silverberg, who shows the law's influence in one major industrial area, Detroit; and Dr. H. A. Millis, former board chairman, who describes what the act has done to collective bargaining practices. Other chapters, reviewing the Wagner Act's purposes and its history, are written by Joseph Rosenfarb, Leon H. Keyserling, Judge J. Warren Madden and Malcolm Ross.

The book, priced at $2, is available through The Bureau of National Affairs, Inc., Washington, D.C.

## Hydrogen Sulfide

Methods used successfully in combating hazards of hydrogen sulfide poisoning in the Elk Basin oil field of Wyoming and Montana can be adapted to nearly every oil field in which gas with a high content of hydrogen sulfide is produced with the oil, the Bureau of Mines has reported in a new publication which again calls attention to the dangers of hydrogen sulfide poisoning in the petroleum industry.

As a result of precautionary measures in disposing of hydrogen sulfide gas by companies operating in the Elk Basin oil field, not a single serious injury or a fatality from hydrogen sulfide poisoning has occurred in more than two years, the bureau report pointed out.

The hydrogen sulfide-bearing petroleum in the Elk Basin field comes from the deeper formation, known as the Tensleep sandstone. Samples of the gas liberated by this oil showed a concentration of hydrogen sulfide gas ranging from 6 to 18 percent by volume, and in field operations the oil must be handled with every precaution if serious injury and possible fatalities are to be avoided.

Since hydrogen sulfide burns readily, companies operating in the Elk Basin oil field have used this means of disposing of the noxious gas. Oil from all the wells on each lease first is taken through an oil and gas separator, which removes most of the gas, after which the oil passes to a battery of 500-barrel steel tanks. The gases are conducted a safe distance from the tanks and burned from a vertical pipe. Before burning the escaping gas, precautions are taken by installing safety screens to prevent a possible flash-back explosion to the battery of tanks or the oil and gas separator.

In reviewing some of the literature on hydrogen sulfide poisoning, John H. East, Jr., mining engineer, and Ralph H. Espach, petroleum engineer, authors of the Elk Basin report, listed and emphasized a number of general recommendations for the prevention of hydrogen sulfide poisoning in the oil fields.

A copy of the publication, Information Circular 7334, "Method of Handling Hydrogen Sulfide Gas in the Elk Bason Oil Field of Wyoming," by J. H. East, Jr., and Ralph H. Espach, may be obtained free from the Bureau of Mines, Department of the Interior, Washington 25, D. C.

## Truck Operation

The National Council of Private Motor Truck Owners, Inc., has published a manual covering all ICC regulations applicable to the interstate operation of private motor trucks. The manual has been designed to acquaint private motor truck owners with all of their obligations and liabilities under the Interstate Commerce Act as administered by the Interstate Commerce Commission, and provides a means for keeping up to date on such pertinent information required by federal regulation of private truck operations.

It is available for a yearly subscription charge of $7.50 per copy, which includes the original manual and all supplementary revisions for a one-year period.

## Industrial Reports

The second issue of the "Bibliography of Scientific and Industrial Reports Distributed by the Office of the Publication Board" has been placed on sale by the Superintendent of Documents, Government Printing Office.

The price of the second issue will be 20 cents. Prices of the weekly bibliographies vary in accordance with their size. The Superintendent of Documents will accept $10. as initial payment for the service and will notify subscribers when additional remittance is required. Copies of the bibliographies also may be purchased singly.

Orders for the bibliographies should be accompanied by check, money order, or Superintendent of Documents coupons and should be addressed to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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## Larkin Sells Boring Division, Plans Expansion Program

In order to greatly expand its oil equipment division facilities, Larkin Packer Company, Inc., St. Louis, Mo., last week announced sale of its Davis Boring Tool Division to Giddings and Lewis Machine Tool Company, Fond du Lac, Wis.

Space formerly utilized by Boring Tool Division in the main St. Louis plant of Larkin Packer Company will be used in a postwar expansion program for oil industry equipment manufacture and development, W. H. Larkin, president, said in announcing the sale.

Larkin Packer Company, Inc., has oil equipment warehouses in Houston, Corpus Christi, Odessa, Shreveport, Tulsa, Great Bend and Wichita Falls.

The Boring Tool Division, which specialized in the manufacture of high precision boring bars, was located adjacent to the main Larkin plant in St. Louis.

With sale of the Boring Tool Division, Larkin Packer Company will now devote the entire space and facilities of the large St. Louis plant exclusively to the development and manufacture of specialized equipment for the oil industry.

## Changes in Personnel Are Announced by Oilwell Supply

The Oil Well Supply Company, U. S. Steel Corporation subsidiary, announces the following personnel changes:

J. A. Teter has been named Mid-Continent division office manager; G. I. Wyckoff, Mid-Continent division engineer, and J. P. O'Toole, manager, subsurface department, Mid-Continent division, each with headquarters in Tulsa.

D. L. Collins has been appointed manager of machinery sales, Gulf Coast division, with headquarters in Houston. J. F. Barling has been appointed office manager for the office in Houston.

Ben H. Ravanell was named Rocky Mountain division engineer and A. D. Otto, Rocky Mountain division office manager, each with headquarters in Denver.

S. T. Lutz has been appointed manager of the Wichita, Kans., sales office.

Personnel appointments in the Central Midwest division offices: R. H. Christy, Central Midwest division office manager; John S. Fuller, Central Midwest division engineer, and R. T. Shoemaker, manager, sub-surface department, Central Midwest division.

A. S. Finefrock is manager of the new Montana district office in Great Falls, Mont.

James A. Hill is manager in the Colorado-Wyoming district with offices in Casper, Wyo.

## Revell Firm Purchased

Halbert W. Mabry has purchased the business formerly known as the Revell Engineering Company, Houston, and will operate under the name of Mabry Machine & Welding Works. The business includes designing and fabrication of geophysical research truck bodies, power plant and oil field equipment repairs, and other work such as making forms for concrete pipe and concrete septic tanks, trailer hitches, and other items.

## Promotions Are Announced By Continental Supply Firm

C. N. Swanson, associated with The Continental Supply Company since 1916, has been appointed director of purchases with offices in Dallas, succeeding R. L. Middleton, who recently resigned. Swanson was formerly manager of the Tulsa store and assistant district manager at Okmulgee, Okla.; Midland, Arp and Longview, Tex. He was named district manager at Tulsa in 1936 and held that position until his recent promotion.

C. N. Swanson

R. A. Brewer

R. A. Brewer, formerly district manager in Fort Worth, was named district manager of the Kansas-Oklahoma district. He became connected with Continental in 1920, and served in various capacities in Oklahoma and Louisiana until 1929, when he was appointed assistant district manager in Shreveport. In 1930, he moved to Fort Worth as assistant district manager, and nine years later, was made district manager.

J. R. Chapman

T. D. Collins

T. D. Collins, former district manager at Casper, Wyo., succeeds to management of the North and West Texas-New Mexico district. Joining Continental in 1926, he was made manager of the Ranger, Tex., store in 1932, and subsequently was employed at Luling, Breckenridge and McCamey, Tex., and Hobbs, N. M. In 1938 he was appointed assistant district manager at Odessa and remaining there until 1943 when he was made district manager at Casper.

J. R. Chapman has been appointed district manager of the Rocky Mountain district. He joined Continental in 1925, and after service in several capacities through Oklahoma, was named manager of the Oklahoma store in 1929. In 1936, he was appointed assistant district manager in Oklahoma City.

## Wilmot F. Wheeler Named Head Of American Chain and Cable

Wilmot F. Wheeler, former executive vice president and treasurer of American Chain & Cable Company, Inc., since 1936, has been elected president to succeed the late William T. Morris. Wheeler has been with the company since 1916, was elected a director in 1919 and treasurer in 1920.

Cyrus F. Johns has been elected executive vice president. Since 1940, he was vice president in charge of all plant operations of the Page Steel and Wire Company, now a division of American Chain & Cable. Stanley Mann, a director since 1936 and assistant treasurer since 1943, has been elected treasurer. He was formerly treasurer of Standard Chain Company when it was acquired by American Chain & Cable Company in 1917.

## Jack Ballagh Named President Of Patterson-Ballagh Firm

Jack C. Ballagh, well known throughout the oil world as a pioneer of the rubber drill pipe and casing protector and also for his active development of many rubber oil field specialties during the past 18 years, has been elected president of Patterson-Ballagh Corporation. He will continue in active charge of sales promotion and development which he has directed since the company's inception in 1927.

## Research Officials Named by Caterpillar Tractor Company

Promotion of three Caterpillar Tractor Company research projects directors and an assistant engineer to positions as assistant directors of research is announced.

The newly appointed assistants are: Dr. L. A. Blanc, who will be in charge of physical, chemical, combustion and metallurgical projects; W. L. H. Doyle, supervisor of special investigations and general research projects including liaison with cooperative and national research activities; C. R. Maxwell, in charge of Diesel engine, combustion systems and fuel injection development projects; and C. R. Schad, in charge of duties of organization, personnel and operational activities.

An expanded postwar program in the field of research, calling for greater flexibility and efficiency, resulted in placing specialists at the head of various research activities.

J. M. Davies will assume added responsibilities including tractor, earth moving, special products and current product revision projects as well as all field activities.

## Houston Company Represents Houston Valve, Pump Firm

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## J. H. Field of Sohio Heads Oklahoma Engineers Group

J. H. Field, Sohio Petroleum Company, Oklahoma City, was elected president of the Oklahoma Society of Petroleum Engineers February 26.

Other officers elected were G. M. Stearns, West Edmond Field Engineering Association, vice president; Fred Carroll, Shell Oil Company, secretary; T. E. Ockerhauser, Shell Oil Company, treasurer.

G. D. Rosen, Stanolind Oil & Gas Company, and Jack Tarner, Phillips Petroluem Company, were elected chairmen of the rules and admission, and the membership and publicity committees, respectively.

Stephen H. King, Lane-Wells Company, substituting for N. J. Mellies, delivered a paper on "Principles of Radio Activity Logging." At the next regular session the engineers will discuss methods of gas/oil control and remedial measures where necessary.

## New Kansas Gasoline Tax Is Passed on to Consumer

Effective March 1, 1946, Standard Oil Company (Indiana) will add to all its selling prices for gasoline in Kansas the 1-cent extra tax imposed by the state legislature.

The law places this additional tax on gasoline for a period of four years or until the governor proclaims that funds in the state treasury are sufficient to retire all revenue anticipation warrants, interest, etc., issued to match federal highway aid. It is to be used for the state's share of financing postwar construction of highways and bridges.

Unlike the existing tax of 3 cents per gallon, this additional 1-cent tax is applicable to motor fuel sold to farmers and to others for non-highway uses. There is no exemption or refund for anybody.

## Personnel Changes Made by Shamrock Oil, Gas Company

Shamrock Oil and Gas Corporation, Amarillo, Tex., announces the following changes in personnel:

F. V. Wallace has been named office assistant to the president, in addition to his other duties as personnel and advertising manager. He joined the company in 1935.

B. R. Carney, who has been a consulting engineer for about six months, has been employed as a special assistant to the president. He spent a number of years with Shell Oil Company.

Walter Price, Jr., has been named land and lease executive. He has been associated with the company since June, 1944.

E. W. Fosshage was named chief geologist. He has been with the company since 1944. Prior to that time, he was with Northern Ordnance Company of Montana.

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